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BILATERAL GANGRENE OF FEET DUE TO ERGOTAMINE TARTRATE USED FOR PRURITUS OF JAUNDICE

REPORT OF A CASE STUDIED ARTERIOGRAPHICALLY AND PATHOLOGICALLY

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Ergot is one of the most efficacious and commonly used drugs. Ergot itself (Claviceps purpurea), a fungus which grows on rye and certain grasses, is a variable mixture of various potent and relatively inert substances. The main active constitutents are the alkaloids ergotoxine and ergotamine, and the amines histamine and tyramine. Before the isolation of crystalline ergotamine, the official fluidextract of ergot was the preparation mainly employed. According to Rothlin,[1] Nelson and Pattee[2] and others the alkaloid ergotamine is the most important constituent of ergot and the one the presence of which in ergot preparations should be ensured. Since the isolation of ergotamine ($C_{33}H_{35}O_5N_5$) by Stoll and Spiro in 1921 this alkaloid has come to be extensively used, mainly as the tartrate.[3] Its most important uses have been the prevention and control of postpartum hemorrhage from atonic uteri, and the treatment of retained lochia, delayed involution, bleeding following cesarean section, and hemorrhage from abortion. It has recently been advocated by various authors for the treatment of many other conditions, however, among which are migraine, exophthalmic goiter, pulmonary hemorrhage, pruritus, diabetes mellitus, diabetes insipidus, melancholia, prolapse of the rectum, and glaucoma. However, for years the Council on Pharmacy and Chemistry has given warning about the possibility of ergotism from the use of this drug.

Ergot consumed in bread made principally of rye has been known for centuries to cause epidemics in Europe of ergotism, or chronic poisoning due to ergot. There are two forms of ergotism, the gangrenous and the convulsive. Sometimes only the gangrenous form occurred in the epidemic, at other times only the convulsive, while occasionally the two forms occurred in the same epidemic.[4] The convulsive form, which does not produce such highly characteristic effects as the gangrenous, has not received the same historical recognition as the latter.[5] The existence of the two forms is probably due to the presence of variable quantities of two or more poisonous principles in the spur. The exact pathogenesis of the convulsive form is not known.

The excellent researches of Dale[6] in 1906 on the physiologic actions of ergot have stood the test of time. Dale and his co-workers and others have extended the work to include the actions of the various more recently isolated constituents of ergot. Dale stated in 1906 that "the first definite laboratory demonstration of the stimulant effect of ergot on the peripheral arteries was given by Kobert. The gangrenous phenomena that he observed in the comb and other peripheral structures of the fowl and the pig, as the resuk of administering sphacelinic acid, were attributed by von Recklinghausen, who investigated the phenomena histologically, to powerful and persistent constriction of the arterioles." Dale's main conclusions from his experiments on animals were as follows:

1. The physiological effects of preparations from ergot, such as cornutine and sphacelotoxin, fall naturally into two groups: (*a*) Stimulant effects on plain-muscular organs, prominent among which are contraction of the arteries, the uterus, and the sphincter of the iris. (*b*) A specific paralysis of the motor elements in the structures, associated with sympathetic innervation, which adrenalin stimulates: the inhibitor elements retaining their normal function, as do also both motor and inhibitor autonomic nerve supplies of cranial and sacral root origin.

2. It is probable that these two sets of effects are produced by different active principles, of which the one responsible for the peripheral paralysis appears also to be concerned in the central convulsant effects described by Kobert and others.

According to Cushny,[7] "the study of the alkaloids of ergot, ergotamine and ergotoxine, in the living organism has shown that they resemble epinephrine in some of their effects and like it act on the myoneural junctions of the true sympathetic nerves. But while epinephrine stimulates these junctions indiscriminately whether they are motor or inhibitory in character, the ergot alkaloids do not act on the inhibitory junctions at all and, while stimulating the motor myoneural junctions in small doses, paralyze them in large amounts. They are less powerful than epinephrine, but the effects last longer and can be elicited by hypodermic injection or even by administration by the mouth. . . . The secondary paralyzing action of ergotamine on the myoneural junctions is elicited only by large doses and does not occur in the therapeutic use of ergot." There has been much discussion by physiologists and pharmacologists with regard to the dual action of ergotamine both

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1. Rothlin, E.: Recherches experimentales sur l'ergotamine, alcaloïde specifique de l'ergot de Seigle, Arch. internat. de pharmacodyn. et de therap. **27**: 459, 1923.

2. Nelson, E. K., and Pattee, G. L.: The Present Status of the Ergot Question, with Particular Reference to the Preparations Used in Obstetrics and Gynecology, Am. J. Obst. & Gynec. **16**: 73 (July) 1928.

3. Manufactured under the trade name of Gynergen by the Sandoz Chemical Works, Inc.

4. Krzysinsky, S.: Pathologische und kritische Beiträge zur Mutterhornfrage, Jena, Gustav Fischer, 1888. Kolosoff, G. A.: Ergotism: Its Etiology, Clinical Signs, Course and Treatment; Principally According to Data of Epidemics of 1909-1910, Russk. Vrach **11**: 55, 120 and 198, 1912.

5. Allbutt, T. C., and Rolleston, H. D.: A System of Medicine, New York, Macmillan Company, 1906, vol. 2, pt. 1.

6. Dale, H. H.: On Some Physiological Actions of Ergot, J. Physiol. **34**: 163, 1906.

7. Cushny, A. R.: Pharmacology and Therapeutics, Philadelphia, Lea & Febiger, 1934.

in constricting and in dilating the vessels. Whatever may be the answer to this knotty problem, from the practical clinical point of view it is mainly the constrictor action that causes concern.

Cases of gangrene or threatened gangrene of the extremities due wholly or partly to the therapeutic use of ergotamine tartrate, while not numerous, have been sufficiently conspicuous to give pause for thought. Most of these cases have concerned women with puerperal fever. Carreras [8] described a fatal case in which a woman with severe puerperal fever, after a total oral dosage of 0.0265 Gm. of ergotamine tartrate in one week, developed excitement, formication, vomiting, diarrhea, sweating, weak pulse, muscle contractures, fixed miosis and gangrene of the feet. Antoine [9] reported a case in which a woman with severe puerperal fever, after a total dosage of 0.05425 Gm. of ergotamine tartrate, developed bilateral gangrene of the legs. There was thrombosis of all the veins of the amputated limbs and spasm of the arteries. He described a similar case of gangrene of one leg following the use of 5 cc. of stabilized ergot. In neither case did he regard the ergot preparation as the sole cause of the gangrene but only as a sensitizing factor.

Guggisberg [10] was of the same opinion. He reviewed ten cases of gangrene following labor at term or mis-

Fig. 1.—Gangrenous left foot. The condition of the right foot was practically identical.

carriage in which ergotamine tartrate had been used and stressed the point that in none of the cases was the puerperium normal. He believed that puerperal infection predisposes to the likelihood of gangrenous processes. He called attention to the fact that the literature contains a large number of reports of puerperal gangrene associated with puerperal infection in which ergot preparations were not used. He concluded that the most common causes of such accidents are emboli and thrombosis occluding peripheral vessels. In his opinion the gangrene is due not to vascular spasm but possibly to the action of some toxin on the vessels and tissues producing peripheral vascular stasis. He warned, however, against the use of ergot preparations in febrile puerperal patients.

Fig. 2.—Thorium dioxide gel arteriogram of the right leg. There is practically complete occlusion of all the main arteries at the junction of the middle and lower thirds of the leg. Collaterals pass downward from above the point of occlusion.

Saenger [11] reviewed the literature dealing with gangrene in the puerperium or following miscarriage which had been attributed to ergotamine tartrate. He found fourteen cases reported. In seven there was gangrene of both feet, in four gangrene of one leg or foot, in one gangrene of some of the fingers of one hand, in one gangrene of the uterus and of the right leg, and in one gangrene of the uterus. Practically complete recovery without amputation occurred in six cases. The range of total dosage was from 6.5 to 117 mg. of ergotamine tartrate. In no case was there a normal labor or puerperium. In nine cases there was puerperal fever and in four cases febrile abortion. In a few also the history suggested preexisting functional vascular disease. In all cases the possibility existed of septic vascular damage, and the ergotamine tartrate was assumed by Saenger to be merely an additional malefactor. In some of the amputated limbs, thrombi in veins and contracted arteries were found. In his discussion he called attention to the eighty cases of peripheral puerperal gangrene collected by Wormser [12] and the large number of cases collected by Stein,[13] in the great majority of which the lower limbs were affected and in which ergot preparations did not play a rôle. Ellerbroek [14] came to a conclusion similar to Saenger's in his three cases of gangrene in women with an abnormal puerperium; in these cases the gangrene affected sites other than the distal parts of the extremities.

8. Carreras, F.: Un caso de ergotismo en el puerperio (Intoxicación por la ergotamina), Rev. méd. de Barcelona **1**: 205, 1924.
9. Antoine, T.: Secalefrage und puerperale Gangrän, Arch. f. Gynäk. **130**: 492, 1930.
10. Guggisberg, H.: Beitrag zur Sekalefrage, Zentralbl. f. Gynäk. **53**: 576 (March 9) 1929.
11. Saenger, H.: Ueber Puerperalgangrän bei septischen Zuständen und Gynergenmedikation, Zentralbl. f. Gynäk. **53**: 586 (March 9) 1929.
12. Wormser, E.: Ueber puerperal Gangrän der Extremitäten, Wien. klin. Rundschau. **18**: 73, 1904.
13. Stein, A.: Gangrene of the Extremities Following Gynecologic Operations and the Puerperium—with Remarks on Embolectomy, Am. J. Obst. & Gynec. **1**: 595 (May) 1925.
14. Ellerbroek, N.: Puerperal Gangrän und Mutterkorngangrän, Zentralbl. f. Gynäk. **53**: 1384 (June 1) 1929.

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The case of Oginz [15] is interesting. A primiparous patient, aged 19, developed evidence of severe infection after a normal labor. An injection of 1 cc. of ergotamine tartrate was given every four hours, so that a total of 45 cc. (0.0225 Gm.) was given within two weeks. Fluidextract of ergot to the extent of 6 drachms (22.5 cc.) also was given during this time. One week after labor the upper and lower extremities became cold and cyanotic, and disappearance of the radial pulses soon followed. Two days later severe pain and numbness began in the toes. Later the fingers became very painful and tingled. The right foot became very cyanotic, the left heel very discolored. Ergotamine tartrate was given for several days after these symptoms appeared, but twenty-four hours after its use was discontinued and local treatment instituted rapid improvement began, the radial pulses returning in good quality. The left foot improved faster than the right. The final result was that three toes of the right foot were lost after ten weeks by amputation, and later a metatarsal bone was removed surgically. The puerperal infection had subsided during the period of recovery of the extremities. This case is fairly illustrative of the cases in which nearly complete recovery from ergotism

Fig. 3.—Cross section of the right anterior tibial artery at about the middle of the occluded portion. There is marked constriction with concentric infolding and hyaline degeneration, especially of the intima. Van Gieson's connective tissue stain; × 23.

ensues. Schmidt's [16] case was almost identical, but no parts were lost. Roch's [17] case was quite similar, partial amputation of one foot eventually becoming necessary.

While it is true that many cases of gangrene do occur in patients with severe puerperal infection to whom little or no ergot has been given and that practically all the cases of gangrene in which ergot has been implicated have been complicated by puerperal infection, nevertheless the conclusion cannot be escaped that the ergot played a very important rôle in many of them, as illustrated so well by Oginz's case.

Fig. 4.—Cross section of the right posterior tibial artery near its lower end, with its venae comitantes. The artery is greatly constricted, with infolding of a sector of the wall. The veins are moderately collapsed. The elastic laminae are shown as black wavy lines. Stained with acid orcein; × 19.

Gangrene of the extremities has also followed the use of ergotamine tartrate for exophthalmic goiter. Speck [18] reported the occurrence of impending gangrene of both feet and legs, which became painful, cold, anesthetic and white with bluish mottling following a total dosage of 186 mg. of ergotamine tartrate (186 tablets) given in two courses with a break of three weeks in the treatment. Also the right arm was painful. Slow recovery ensued with some residual gangrene of a little toe and an area on the dorsum of the foot. Speck attributed recovery to the use of theophylline. Platt [19] reported a similar case of gangrene of the feet with slow recovery. He attributed recovery partly to the use of scopolamine. Müller [20] observed a case of bilateral impending gangrene of the feet and legs after the injection of 24 cc. of ergotamine tartrate with eventual loss of all the toes of one foot. Milder cases have been reported in which there were severe pains along the course of the arteries without evidence of much circulatory disturbance. The results of the treat-

15. Oginz, P.: Ergotismus gangrenosus, Am. J. Obst. & Gynec. **17**: 657 (May) 1930.
16. Schmidt, O.: Gangrän an den Extremitäten nach normaler Entbindung, Tubargraviditat und septischen Abort, Zentralbl. f. Gynäk. **52**: 1950 (Aug. 4) 1928.
17. Roch, M.: Ergotisme gangreneux, Presse méd. **43**: 31 (Jan. 5) 1935.
18. Speck, W.: Gefahr des Mutterkornbrandes bei Anwendung von Gynergen (Sandoz) in der Basedow-Chirurgie, Med. Klin. **29**: 1521 (Oct. 10) 1930.
19. Platt, R.: Ueber die Behandlung des Morbus Basedow mit Ergotamin, Klin. Wchnschr. **9**: 238 (Feb. 8) 1930.
20. Müller, K.: Zur Frage der Behandlung des Morbus Basedowii mit Ergotamin, Münchens. med. Wchnschr. **80**: 1784 (Nov. 10) 1933.

ment of exophthalmic goiter with ergotamine tartrate are certainly not sufficiently encouraging to warrant continuance of this form of therapy.

Besides gangrene, which is the most important toxic disturbance due to ergotamine tartrate, other toxic manifestations have been observed. The commonest are headache, nausea, vomiting, diarrhea and dizziness. Less common symptoms are weakness, formication and

Fig. 5.—Cross section of the left posterior tibial artery near its lower end, with its venae comitantes. The artery is moderately constricted, with infolding of the intima; the lumen is filled with a partially organized thrombus, and there is hyaline degeneration of the wall. The veins are empty and undergoing hyaline degeneration. Van Gieson's connective tissue stain; × 17.

itching, coldness of the skin, thirst, confusion, depression, drowsiness, cyanosis, syncope, collapse, anginal pains, tachycardia or bradycardia, elevation or lowering of the blood pressure, amblyopia, cataract, twitching, muscular cramps, convulsions, hemiplegia, tabetic symptoms and sudden death. Labbé, Boulin, Justin-Besançon and Gouyen [21] described a case of hyperthyroidism, treated with ergotamine tartrate, in which there were severe anginal pains, hemiplegia and jacksonian epilepsy. Only 1.5 mg. of the drug was administered. Another patient of theirs vomited, became comatose and died in five hours after the administration of only 0.5 mg. of the drug. Panter's [22] hyperthyroid patient developed miosis with fixed pupils and absence of the deep reflexes following the injection of 5 mg. of ergotamine tartrate in three days. These manifestations disappeared within eighteen days. Kravitz [23] reported a case of optic atrophy secondary to neuroretinitis, apparently produced by pills containing ergot taken because of amenorrhea.

REPORT OF CASE

Clinical History.—An unmarried white man, aged 64, a fisherman, admitted to the Georgetown University Hospital, Aug. 1, 1935, had spent much time wading in shallow water to obtain live bait. His illness had begun a week before with a severe chill, which was repeated daily. There were generalized muscular aching, malaise and thirst. The family history was irrelevant. The past history was negative except for chronic constipation, hemorrhoids, the "corn itch," and some dysuria and nocturia. The patient was thin but muscular, with apathetic facies, a low order of intelligence and moderate jaundice, with scattered petechiae of the arms, thorax and abdomen. He was cooperative but somewhat confused. The pupils were moderately constricted. There was evidence of poor dental hygiene, and the tongue was coated. The heart and lungs were apparently normal. The heart rate was 80 per minute, with regular rhythm, and respiration was normal. The blood pressure was 110 systolic and 80 diastolic. Moderate tenderness and rigidity were present in the right upper quadrant of the abdomen, and slight tenderness was noted in the right costovertebral angle. The prostate gland was moderately hypertrophied as determined by digital rectal examination. The extremities were apparently quite normal. The deep tendon reflexes were equal but moderately reduced in intensity. The temperature was 98.6 F. Urinalysis showed a trace of albumin. A hemogram showed 83 per cent hemoglobin (Newcomer method), 4,270,000 erythrocytes and 9,650 leukocytes per cubic millimeter of blood, with 64 per cent polymorphonuclear neutrophils, 12 per cent eosinophils, 1 per cent mast cells, 20 per cent small lymphocytes and 3 per cent monocytes. The Wassermann and Kahn reactions of the blood were negative. The

Fig. 6.—Cross section of the left anterior tibial artery near the upper end of the occluded portion. It is extremely constricted, the lumen being slitlike. There is moderate atherosclerosis. Hematoxylin and eosin stain; × 28.

qualitative van den Bergh reaction was direct in thirty seconds, and the quantitative test showed 13.6 mg. of bilirubin per hundred cubic centimeters of blood.

The day after admission the patient began to complain of severe generalized pruritus. For this, 1 cc. of ergotamine tartrate (0.0005 Gm.) was ordered by a resident to be given by hypodermic injection three times daily, although the usual method of administration in this hospital had been oral. It was administered for six and one-third days, a total of 0.0095

21. Labbé, M.; Boulin, R.; Justin-Besançon, L., and Gouyen, J.: L'angine de poitrine ergotaminique, Presse méd. **37**: 1069 (Aug. 17) 1929.
22. Panter, H.: Tabische Symptome nach Gynergen-Injektionen, Med. Klin. **22**: 880 (June 4) 1926.
23. Kravitz, Daniel: Neuroretinitis Associated with Symptoms of Ergot Poisoning, Arch. Ophth. **13**: 201 (Feb.) 1935.

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Gm. of ergotamine tartrate being given.[24] On the second day of the administration of ergotamine tartrate there was coldness of the upper extremities, which was not later complained of. On the third day there was tenderness of the long bones of the legs. On the fourth day there was a subjective burning sensation in the toes of the left foot, and coldness and blueness of the distal one third of both feet were noted. The left dorsalis pedis artery was palpable but not the right. The blood pressure on this day was 138 systolic and 120 diastolic. On the fifth day

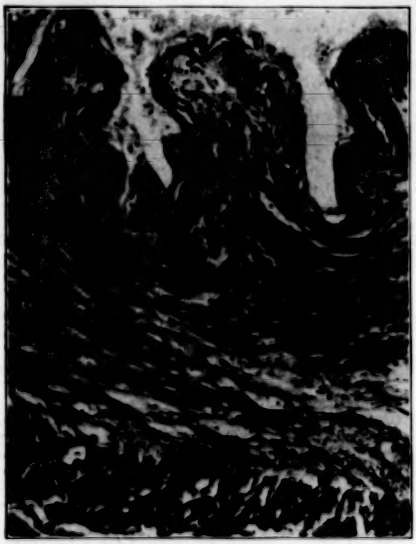

Fig. 7.—Higher magnification of a sector of the wall of the artery shown in figure 3. The hyaline degeneration is better shown. There are nuclei, probably of connective tissue cells, mainly in the infolded portion. Van Gieson's connective tissue stain; × 153.

the legs and feet were very painful, the first three toes of the left foot and the first two of the right were purplish red, and pulsations could not be felt in the vessels of either foot. On the sixth day both feet were painful, cold and blue, but faint pulsations were palpable in the dorsalis pedis arteries.

At this time the ischemia of the feet was not associated by the visiting physician with the use of ergotamine tartrate, which he was not informed was being given, but the next day the use of this drug was stopped by the resident who had ordered it because the pruritus had ceased. The feet continued to be very painful, the pulsations of the arteries of the feet ceased entirely, and the skin of the feet remained cold and mottled with blue. On the thirteenth day after the beginning of administration of ergotamine tartrate the toes of both feet began to turn black and to become dry and shriveled, with a definite line of demarcation. The feet had continued to be very painful. The pulsations of the popliteal arteries were strong. The blood pressure in the arms was 110 systolic and 70 diastolic, and in the thighs it was 155 systolic and 90 diastolic. At this time the diagnosis of probable ergot poisoning was made, although the medical consultant was not informed of the fact that ergotamine tartrate had been used. Amputation of both feet at the junction of the middle and lower thirds of the legs was recommended by the surgical consultant.

During the month in which the gangrene of the feet had been developing, the patient had improved greatly otherwise. He slowly became clear mentally, the jaundice disappeared, and the abdominal tenderness and rigidity subsided. During the first ten days the temperature rarely went above 99.5 F., but after this it was almost continuously irregularly elevated, ranging from 98.6 to 104.2 F., but usually between 100 and 102 F. The pulse rate ranged usually between 90 and 100 per minute. Because of dehydration and jaundice, 5 per cent dextrose solution was given intravenously in amounts of from 1 to 3 liters daily. Other symptomatic and supportive measures of therapy were employed.

September 13, just forty days after the first dose of ergotamine tartrate had been given, the right leg was amputated about half way between the knee and the ankle. By this time mild infection was evident in both feet at the line of demarcation of the gangrene (fig. 1). At the time of operation an arteriogram was made by means of injection of 15 cc. of thorium dioxide sol into the right popliteal artery (fig. 2). This showed the main arteries of the leg to be smooth in outline and apparently normal down to the lower third of the leg, where they faded out into a point; small, long and somewhat tortuous collateral arteries passed downward toward the feet from the arteries above the point of occlusion. So far as we know, these are the first arteriograms ever made from the human subject in a case of gangrene due to ergot. September 16 the left foot was amputated below the ankle. Following these operations the fever continued as before, and because of moderate anemia blood transfusions were given. The stump of the right leg healed normally; that of the left, however, became necrotic, and on September 26 the left leg was amputated about half way below the knee. This new stump healed normally.

Fig. 8.—Cross section of a small artery in the foot proximal to the gangrenous area. The vessel is moderately constricted, and the intima appears to be proliferated. Stained with acid orcein; × 97.

By September 30 the temperature had returned to normal and it remained so. November 4 the patient left the hospital in good general condition, with the stumps of both legs healed.

Examination of the Amputated Extremities.—Both feet showed typical dry gangrene with moderate secondary infection and a line of demarcation at the distal third (fig. 1). When the vessels of the amputated legs were dissected out, all showed grossly similar changes. They all appeared to be constricted

24. Lichtman (Therapeutic Response to Ergotamine Tartrate in Pruritus of Hepatic and Renal Origin, J. A. M. A. **97**:1463 [Nov. 14] 1931) and Snell and Keyes (Pruritus of Jaundiced Patients: Its Incidence and Treatment, M. Clin. North America **16**:1455 [May] 1933) reported excellent results with ergotamine tartrate in cases of pruritus due to jaundice. They used 1 mg. orally three or four times daily. Snell and Keyes suggested that if used subcutaneously or intramuscularly doses of from 0.5 to 1 mg. be used once daily.

throughout their course. The degree of constriction varied, however, at different points. In some sections the vessels were so severely constricted that their lumens were almost obscured. In other sections they were less severely constricted, and in these areas the lumens were filled with thrombi. The veins were all practically empty.

Microscopic sections of all the arteries, frequently including their venae comitantes, were made, and various stains were employed (hematoxylin and eosin, van Gieson's connective tissue stain, Masson's trichrome stain, Verhoeff's elastic tissue stain and acid orcein). The sections of the larger arteries confirmed the gross appearance of these vessels. Depending on the degree of constriction of the artery, the wall appeared to be thickened. The greater the degree of constriction, the greater was the apparent thickening. The constriction took various forms. In some sections the intima was thrown into concentric folds, which projected into the lumen, almost completely filling it (fig. 3). In others there was eccentric infolding, with one sector of the wall bulging deeply into the lumen (fig. 4). In still other sections there was only moderate and irregular concentric infolding, with the lumen fairly well preserved and filled with a thrombus undergoing organization (fig. 5). At some points where the constriction was great the lumen on cross section was slitlike, apparently because of the presence at these points of moderate atherosclerosis (fig. 6).

The thrombi were all in the less constricted segments. The venae comitantes were usually empty or contained apparently liquid blood. They seemed to be moderately constricted or collapsed, and their walls also appeared to be thickened. There was no evidence of inflammation in or about the walls of any of the vessels except in the gangrenous portions of the feet. The walls of all the vessels, more particularly the arteries, were in the process of hyaline degeneration (fig. 7). Both the media and the intima were thus affected. The more constricted the vessel, the thicker and more dense and homogeneous was the intima. The hyaline substance had separated and partially replaced the muscle fibers of the media. Into the intimal folds the media appeared to be streaming; but in these portions of the wall hyaline changes were advanced, and nuclei, apparently of connective tissue cells, were present in moderate numbers. The internal and external elastic laminae were fairly well preserved, although the internal lamina was broken in places in the most severely constricted segments and the external lamina was considerably fragmented although rather compact. The small arteries and arterioles showed changes very similar to those of the arteries, but while they were constricted the intima was not usually thrown into folds, and thrombi were rarely seen.

In the feet just proximal to the gangrenous area some of the small arteries showed changes very suggestive of proliferation of the intima (fig. 8), in some instances the lumen being almost completely obliterated by the cells. Within the gangrenous area the walls of the small arteries and veins showed various degrees of secondary inflammatory reaction, and a few small veins contained thrombi. One medium sized nerve showed vacuolization of the myelin sheaths. There was astonishingly little evidence of arteriosclerosis.

COMMENT

Since the study of von Recklinghausen [25] long ago of the histologic changes that occur in the cock's comb in ergotism little has been added to his description. Others have confirmed his observations. Recently Lewis [26] with the collaboration of Gelfand has carried out histologic researches on the gangrene of the comb of white Leghorn hens due to daily injections of 10 mg. of ergotoxine into the breast muscles. From the study these workers concluded that the "vascular spasm in ergot poisoning does not arrest the circulation and so does not cause gangrene directly. The spasm profoundly slows the blood stream and leads to the secondary changes in the vessels described" (thrombi due to stasis from injury to the endothelium and loss of plasma). This idea is strengthened by the results in our case, although the degree of constriction alone seemed sufficient to be productive of serious ischemia.

The fundamental pathogenesis of the gangrene, as demonstrated by our case, is certainly intense constriction of the arteries and arterioles with thrombosis completing the vascular occlusion. The hyaline changes are undoubtedly secondary to nutritional deficiency of the walls of the vessels due to occlusion of the vasa vasorum by the constriction of the vessels.

Kaunitz,[27] on the basis of experiments similar to those of Lewis and because of certain etiologic resemblances, has postulated the possible implication of ergot in the causation of thrombo-angiitis obliterans. The suggestion is interesting but proof is certainly lacking, although there is pathologically a superficial resemblance between the two conditions. More recently McGrath [28] has called attention to the pathologic similarity and has reemphasized the fact that in epidemics of gangrenous ergot poisoning the male has been the more predominant victim, just as he is of Buerger's disease. He found the predominant histopathologic features of the gangrenous tails of poisoned rats to be marked cellular proliferation and swelling of the intima, especially in the smaller arteries and arterioles, and organizing thrombi in the arteries. The proliferation of the intima of some of the small arteries and arterioles has been referred to in our case. McGrath showed that although gangrene could be produced in both males and females, the females were completely protected by the use of sufficiently large daily doses of theelin, while the male rats were incompletely protected. The inference is that in the case both of ergot poisoning and of thrombo-angiitis obliterans the female may be protected by a sex hormone, probably the estrogenic substance of the ovary.

Ergotamine tartrate is such a useful drug, especially when properly employed by obstetricians, that it should not be condemned because of occasional cases of gangrene or other poisonous effects. Certain precautions should be observed, however. A study of the literature leads definitely to the conclusion that great hesitancy should be employed in its use in the febrile puerperium. Probably also the drug should not be administered to patients, male or female, with any acute infectious or toxic disorder. A history of vascular disease, whether functional or organic, would appear also to constitute a contraindication. Our patient was suffering from toxemia of unknown cause, and possibly his occupation, which involved frequent wading in water, may have predisposed the vasomotor innervation of the arteries of his legs and feet to increased susceptibility to toxins.

Some authors advocate a small test dose of the drug to determine whether increased susceptibility exists. Others suggest using the drug orally only. Neither of these precautions is sufficient for the avoidance of toxic effects. It seems to us that, when patients with the contraindications mentioned have been eliminated, the important precautions are the avoidance of prolonged use of the drug and careful watch for the appearance of toxic manifestations, including frequent observation of the hands and feet.

At the slightest indication of a toxic effect, whether systemic in nature or local, use of the drug should be

25. von Recklinghausen: Handbuch der allgemeinen Pathologie, Stuttgart, 1883.
26. Lewis, T.: The Manner in Which Necrosis Arises in the Fowl's Comb Under Ergot Poisoning, Clin. Sc. 2:43 (Sept.) 1935.
27. Kaunitz, J.: The Pathological Similarity of Thrombo-Angiitis Obliterans and Endemic Ergotism, Am. J. Path. 6:299 (May) 1930.
28. McGrath, E. J. G.: Experimental Peripheral Gangrene: Effect of Estrogenic Substance and Its Relation to Thrombo-Angiitis Obliterans, Arch. Int. Med. 58:942 (June) 1936.

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discontinued. Measures to produce vasodilatation should be instituted immediately on the appearance of evidence of disturbed peripheral circulation. Polák [29] found that in experimental gangrene the administration of epinephrine markedly delayed the gangrenous process. Possibly this drug would be of value in clinical cases. Some other strongly vasodilating drug, such as papaverine hydrochloride, might also be tried. Mild local heat should be carefully applied. The value of passive vascular exercises induced by alternating positive and negative pressures is questionable, but this method of treatment deserves a trial.

SUMMARY AND CONCLUSIONS

1. Ergotamine tartrate, an efficacious alkaloid of ergot, is capable of producing serious toxic disturbances, usually as a result of overdosage. Chief among these ill effects is gangrene of the extremities.

2. The cause of the gangrene is occlusion of the medium sized and small arteries and arterioles by severe constriction and thrombosis. Intimal proliferation of small arteries may also play a rôle. Hyaline degeneration of the vessels follows the vasoconstriction.

3. The drug probably should not be used in cases of febrile puerperium, in cases of severe toxemia from any cause or in patients who have presented evidence of vascular disease, functional or organic.

4. Except when well established indications for its use arise, the drug should not be employed except by careful investigators who are able to observe constantly their patients.

5. At the present time use of the drug probably should be limited by the profession at large to appropriate obstetric and gynecologic conditions and to the relief of migraine. Taken orally, the drug is less apt to produce toxic effects than when it is injected.

6. When the drug is used, careful watch should be kept for the appearance of any toxic symptoms, including signs of impaired peripheral circulation. On the appearance of these, the use of the drug should be discontinued immediately. Epinephrine and papaverine hydrochloride are suggested for relaxing the vascular spasm.

7. In the case here reported a fisherman had a toxemia with jaundice of unknown etiology. Ergotamine tartrate was injected because of pruritus. Within a week 19 cc. was used. Gangrene of the feet developed during this time, and amputation of the legs was necessary. Study of the vessels showed the changes due to ergotism. This is apparently the first case of gangrene of the feet due to an ergot preparation in which arteriograms have been made.

8. The total dosage of ergotamine tartrate administered in this case was larger than should have been employed by hypodermic injection. The only excuse is that the medical resident who ordered the drug was not sufficiently informed concerning its use. Others may be equally uninformed. The attending physician did not know the drug was being used.

9. Not only the Council on Pharmacy and Chemistry of the American Medical Association [30] but also the manufacturers of the material used have repeatedly warned against the dangers of overdosage and prolonged use of the drug.

Georgetown University Hospital.

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GANGRENE AND DEATH FOLLOWING ERGOTAMINE TARTRATE (GYNERGEN) THERAPY

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In view of the recent increasing use of ergotamine tartrate (gynergen) in clinical medicine, the following case report suggesting some of its possible dangers may be of interest:

REPORT OF CASE

History.—M. I., a white woman, aged 52, a housewife, was admitted to the Medical Service of the William J. Seymour Hospital, Sept. 5, 1935. Her chief complaints were hematuria, urgency of urination, and weakness. Her present illness began four weeks before admission, at which time, in a suicidal attempt, the patient swallowed 200 grains (13 Gm.) of barbital. She was taken to the Detroit Receiving Hospital, where she remained for four weeks. During this period she developed hematuria and urgency of urination, but these symptoms disappeared soon after her admission to this hospital. The weakness was of two years' duration and was associated with numbness and tingling of her upper and lower extremities. Her past history was negative except for a weight loss of 40 pounds (18 Kg.) during the past three years, an appendectomy and a right oophorectomy in 1917, and a left oophorectomy and a hysterectomy in 1927.

Fig. 1.—Arterioles, venules and capillaries of epicardium; × 90.

Examination.—The patient was apathetic and not acutely ill. The skin was pale and very dry. The hair was coarse and

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dry with marked thinning. Fundoscopic examination revealed a moderate degree of sclerosis of the vessels. The examination of the heart, lungs, abdomen and pelvis was negative. The blood pressure was 105 systolic, 75 diastolic.

Laboratory examination on admission revealed: Urine: specific gravity 1.006, albumin ++, sugar negative, and from 10 to 15 white blood cells. Blood count: hemoglobin 9.2 Gm.; red blood cells 3,460,000; white blood cells 11,800; polymorphonuclears 60 per cent (filamented forms 57, nonfilamented 3), lymphocytes 35 per cent, mononuclears 5 per cent. Gastric analysis was normal except for the presence of red blood cells. Blood Kahn and Kline reactions were both negative. The basal metabolic rate was minus 40 and minus 36 per cent.

Fig. 2.—Right femoral artery; × 25.

Clinical Course.—The clinical impression was hypothyroidism. The patient was given thyroxin and later thyroid extract, under which medication she showed a persistent progressive improvement in both her physical and mental condition, and her basal metabolic rate was raised to within normal limits. Her subsequent course in the hospital was uneventful until November 13, when she complained of pain in both hands. The metacarpophalangeal joints were tender. A roentgenographic examination revealed no evidence of bone erosion or loss of joint space. It was believed that the patient was developing an early atrophic arthritis, for which she was given injections of neoarsphenamine. December 3 she received 0.15 Gm. of neoarsphenamine intravenously, and thereafter 0.3 Gm. every fourth day for five injections. December 18 the sclerae developed an icteric tint. The liver was not palpable. On the following day there was diffuse icterus. Neoarsphenamine therapy was discontinued; the patient was given sodium thiosulphate and dextrose intravenously, and placed on a high carbohydrate and high calcium diet. December 20 the blood showed an icterus index of 66, an immediate direct van den Bergh reaction, and a serum bilirubin of 15 mg. per hundred cubic centimeters of serum. It was believed that the patient had developed toxic liver damage secondary to the neoarsphenamine. December 24 there was a slight trace of urobilinogen in the urine. The serum bilirubin was 25 mg. per hundred cubic centimeters. December 30 albuminuria was +++. The icterus index rose progressively. X-ray studies showed no evidence of disease of the gallbladder, esophagus, stomach or duodenum. Because of pruritus the patient was given an ampule of 0.5 cc. 1:2,000 (0.25 mg.) ergotamine tartrate (gynergen) subcutaneously December 28 and thereafter one ampule daily up to and including December 31, receiving a total of four ampules (1 mg.). On December 29, following the second injection, the patient began to complain of pain and coldness in her legs. Her temperature was 100.5 F. December 30, examination disclosed cyanosis, coldness and impaired sensation of the lower two thirds of both legs. A light cradle was placed over her lower extremities. On the morning of December 31 there was definite bluish mottling of the lower two thirds of both legs. Both hands were cold and cyanotic. Pulsation of the dorsalis pedis and radial arteries could not be felt, nor was a blood pressure reading obtainable. Pulsation of the posterior tibial and popliteal arteries was barely palpable. The heart sounds were regular and of fair quality. Examination of the fundi revealed definite narrowing of the arteries with arteriovenous compression which was not present when she was examined on admittance. Gynergen was now suspected of being the cause of the gangrene. Surgical consultation recommended conservative measures. Accordingly the patient was given vasodilators consisting of glyceryl trinitrate and amyl nitrite, along with strychnine sulfate. Passive vascular exercise was attempted but could not be continued because of mechanical difficulties. The appearance of the upper extremities improved. The legs, however, became progressively more involved until there was blackness of the lower two thirds, with maceration of the skin. Despite the administration of amyl nitrite and glyceryl trinitrate, no definite dilatation of the vessels in the fundi could be demonstrated. The patient's general condition became progressively worse; she became semistuporous and dyspneic and died Jan. 1, 1936, at 3 p. m. Terminally there was a temperature elevation to 101.4 F.

Fig. 3.—Arteriole and capillary, pancreas; × 200.

Autopsy.—This was performed one hour after death (H. I. G.). The body was emaciated and markedly jaundiced.

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There was a symmetrical, dry gangrene of the lower two thirds of both legs, with some maceration of the overlying skin. Both hands were cyanotic. The thyroid was markedly atrophic. The heart weighed 240 Gm. and was of normal color. The coronary arteries and their branches were definitely narrowed. The wall of the aorta appeared somewhat thickened and bile stained. There was atherosclerosis with incomplete thrombosis

Fig. 4.—Lung arteriole; × 135.

of the right femoral artery just above the level of the knee. No other peripheral vessels were removed. The trachea contained some grayish mucoid material. The mucosa was not inflamed. The left lung weighed 240 Gm. and showed evidence of passive congestion at the base. The right lung weighed 390 Gm. and had some pleural adhesions at the base posteriorly. The liver showed diffuse, yellowish discoloration and marked passive congestion. The spleen weighed 150 Gm. and showed passive congestion. The gallbladder contained about fifty small, black, soft calculi with some stringy mucoid bile. The common bile duct was patent and free from external compression. The pancreas was bile stained but otherwise normal in appearance. The right kidney weighed 120 Gm., the left 100 Gm. The uterus, ovaries and appendix were absent. Permission for examination of the brain was not obtained.

The anatomic diagnoses were parenchymatous degeneration of liver with jaundice (arsenical?); gangrene of lower two thirds of both legs; atherosclerosis of right femoral artery with partial recent thrombosis in its lower third; atherosclerosis and calcification of the abdominal aorta; narrowing of the coronary arteries; general passive congestion; atrophy of thyroid; (cardiac failure; acute ergotism?)

On microscopic examination (S. E. G.) the tongue showed some fatty infiltration of the musculature. The sections of the lungs showed patchy areas of atelectasis and early fibrosis, containing many thickened and narrowed arterioles. The myocardium showed slight to moderate myocardial hypertrophy and slight fatty infiltration. There was necrosis of the liver parenchyma, which involved principally the central portion of the lobules. The Kupffer cells contained bile pigment deposits. There was marked passive congestion, the blood sinuses and the capillaries being dilated and filled with blood. Lymphocytic infiltration was present in the perilobular and subcapsular stroma. The pancreas was the seat of marked passive congestion and a moderate degree of fatty infiltration. A lymph node (hepatic) showed lymphoid hyperplasia and dilatation of the blood and lymphatic capillaries. In the kidneys there was some atrophy, a moderate degree of passive congestion, cloudy swelling of the tubular epithelium, bile pigment casts within the tubules, and some glomerular scarring. The blood vessels showed the following changes: The coronary artery and its branches in the epicardium and myocardium showed thickening of the walls with prominence of the fibers of the media. The endothelial cells were conspicuous and the lumens of the vessels were narrowed. The coronary veins were widened and largely empty. In the media of the aorta there was an area of perivascular lymphocytic infiltration. The adventitia showed dilatation and congestion of the capillaries. The endothelium was actively proliferating and there was perivascular lymphocytic infiltration. The arterioles of the lungs were many; their walls were thickened on an average to about twice the diameter of the lumens. In a number of these vessels the lumen was reduced to a slit. The arterioles of the pancreas, kidney, liver and lymph node were definitely thickened, but to a lesser extent, the walls being about half the diameter of the lumens in these locations. The capillaries of the pancreas were greatly dilated and engorged with blood. The veins appeared dilated. There was prominence of the endothelium of all the blood vessels of the pancreas. A section of skin taken from the lower part of the right thigh showed in the corium many dilated capillaries with endothelial proliferation and some perivascular lympho-

Fig. 5.—Arteriole, × 90; branch of right femoral artery.

cytic infiltration. The walls of the femoral artery were thickened. The adventitia contained numerous dilated capillaries with proliferating endothelium and some perivascular lymphocytic infiltration. There was moderate calcification of the media, and a large, fragmented, subintimal atheroma undergoing hyalinization. An area of lymphocytic infiltration was present between the media and the atheroma. The lumen was narrowed. Although the atheroma was fragmented, no recent

thrombus was seen. In one section there was adjacent to the femoral artery an arteriole of medium size, which showed marked thickening of its walls to about three times the diameter of the lumen. Its endothelial cells were conspicuous.

REVIEW OF LITERATURE

Saenger [1] reviewed the reports by various authors of thirteen cases of gangrene that developed in women with puerperal sepsis following the oral and intramuscular administration of ergotamine tartrate. The total dose in these patients varied from 6.5 to 117 mg. Saenger did not definitely state whether the gangrene was due to septic vascular disease or whether puerperal sepsis predisposes women to develop gangrene after ergotamine tartrate therapy. In two cases in which the amputated gangrenous extremities were examined, the only pathologic change demonstrable was a contraction of all the arteries. In a third case there was thrombosis of the femoral vein with purulent thrombophlebitis of the dorsal pedis vein of the same side. In two other instances the patients had complained of paresthesias in the extremities before the institution of gynergen therapy.

Labbé, Besançon and Gouyen [2] reported the unfavorable action of gynergen in patients with exophthalmic goiter. One of their patients, a woman, aged 49, who

Fig. 6.—Coronary arteriole in myocardium; × 135.

had a severe hyperthyroidism with a basal metabolic rate of plus 108, was given three injections of 0.5 mg. each of ergotamine tartrate. Several hours after each injection she was seized with an attack of severe anginal pain. Each attack was more severe and of longer duration than the preceding one. Following the third injection she developed a paralysis of the left arm and left side of the face. The authors attributed the anginal attack to coronary artery spasm and the paralysis to cerebral artery spasm. A second patient, a woman, aged 60, with exophthalmic goiter of moderate severity, was given one injection of 0.5 mg. of

Fig. 7.—Coronary arteriole, epicardium; × 525.

ergotamine tartrate, which was followed by vomiting. A few hours later she died in syncope. They concluded that patients with exophthalmic goiter are particularly susceptible to the action of ergotamine and that in this disease the drug should be used with extreme caution.

Zimmermann's [3] patient, a woman, aged 43, complained of anginal symptoms and a severe anemia due to uterine bleeding. After one day's complete freedom from the angina following bed rest she was given an injection of one ampule of gynergen. A few minutes thereafter a prolonged anginal attack occurred, and on the following morning the patient died. On the day prior to the administration of gynergen the electrocardiogram showed some depression of the ST interval in leads 2 and 3. Following the injection, the ST interval showed more marked depression in all leads, being particularly pronounced in lead 2. At autopsy there was found extreme narrowing of the mouths of both coronary arteries due to syphilitic aortitis. The author attributed the fatal status anginosus of this patient to a vasoconstrictor action of the gynergen on the coronary system.

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2. Labbé, M.; Justin-Besançon, L., and Gouyen, J.: Accidents consécutifs au traitement de la maladie de Basedow par le tartrate d'ergotamine, Bull. et mém. Soc. méd. d. hôp. de Paris **53**: 429 (April 1) 1929.

3. Zimmermann, O.: Störung der Coronardurchblutung durch Ergotamin, Klin. Wchnschr. **14**: 500 (April 6) 1935.

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Roch's [4] patient had a fracture of two years' standing of the navicular and calcaneus bones of the left foot, with some residual infection. Following a cesarean operation she developed a septic infection and was given injections of slightly less than 3 mg. of gynergen daily for four days. On the third and fourth days she developed pain and pallor in all the extremities. On the fifth day lividity developed in the left foot with an associated coldness and cyanosis. Amputation of the foot was necessary. This author believed that gangrene following ergotamine tartrate therapy may be favored by the presence of infection and possibly "by an alteration of the circulatory parts or a derangement of the vegetative nervous system."

McGrath [5] was able to produce gangrene of the tail in white rats by the injection of ergotamine tartrate, the dosage varying from 25 to 100 mg. per kilogram of body weight. Pallor and sensitiveness of the part occurred after three to five days, cyanosis and exquisite pain in from six to nine days, blackening in from ten to sixteen days, and demarcation in from seventeen to twenty days. This was followed by sloughing of the gangrenous portion. The injection of theelin following the administration of gynergen was able to prevent the development of gangrene in female rats but not in male rats. Pathologically there was marked cellular proliferation and swelling of the intima, which was most evident in the small arteries and arterioles. In some sections the lumens were almost completely occluded. The veins were involved to a lesser extent. The large central artery of the tail, as well as the superficial veins, showed a tendency to thrombosis. McGrath [6] was unable to state the effect of ergotamine on the coronary vessels.

Herrick [7] by the injection of from 0.5 to 1 mg. of gynergen intravenously in four dogs found that, on the average, the blood flow in the femoral artery was diminished to 25 per cent of normal. In two other dogs the blood flow was diminished to 57 and 35 per cent respectively.

Pool and Nason [8] by injections of ergotamine in cats were able to demonstrate a constriction of the arteries of the dura and the skin. In the former the average decrease in diameter was 25 per cent, in the latter 39 per cent.

SUMMARY

The case herein reported is that of a middle-aged woman who developed gangrene of both lower extremities immediately after the institution of ergotamine tartrate (gynergen) therapy. On postmortem examination all the arterioles examined were found to be contracted. The experimental work of McGrath on rats, demonstrating the production of gangrene following the injection of gynergen, suggests the possibility of a similar effect in our patient. The vascular disease present in our case would seem to have predisposed to the development of the gangrene. On the basis of the evidence at hand it is suggested that the use of drugs of this type be avoided in cases of vascular disease such as atherosclerosis, Buerger's disease, coronary sclerosis, and syphilitic narrowing of the mouths of the coronary arteries.

4. Roch, M.: Ergotisme gangréneux, Presse méd. 43:31 (Jan. 5) 1935.
5. McGrath, E. J.: Experimental Peripheral Gangrene: Effect of Estrogenic Substance and Its Relation to Thrombo-Angiitis Obliterans, Arch. Int. Med. 55:942 (June) 1935.
6. McGrath, E. J.: Experimental Peripheral Gangrene, J. A. M. A. 105:854 (Sept. 14) 1935.
7. Herrick, J. F.: Effect of Ergotamine Tartrate on Blood Flow and Blood Pressure in Femoral Artery of the Dog, Proc. Soc. Exper. Biol. & Med. 20:871 (April) 1923.
8. Pool, J. L., and Nason, G. I.: Cerebral Circulation: Comparative Effect of Ergotamine Tartrate on the Arteries in Pia, Dura and Skin of Cats, Arch. Neurol. & Psychiat. 33:276 (Feb.) 1935.

THE PROBLEM OF THE SPASTIC CHILD

WITH CLINICAL SUMMARY OF ONE THOUSAND CASES

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This paper is the outgrowth of more than a year's study of 1,000 cases of cerebral birth hemorrhage treated at the Orthopaedic Hospital during the past twelve years. It represents a statistical summary of the cases seen and is a crystallization of certain ideas regarding the care and treatment of the spastic patient.

The subject of cerebral birth hemorrhage and its sequelae calls for a comprehensive knowledge in such varied fields of medicine and surgery that no one person can be intimately versed in all its ramifications. I think that this is one of the main reasons why the spastic child has been so shunted about and ignored by the medical profession.

Probably the chief pathologic condition found in the first month of life is injury to the brain from hemorrhage. Various reports indicate that one third of the deaths occurring during labor are due to cerebral hemorrhage. In fact, some believe that brain hemorrhage is almost a physiologic condition attending childbirth. In one series of 500 new-born babies, 9 per cent showed bloody spinal fluid, and in a series of Negro babies the percentage was 14. The incidence of retinal hemorrhage runs as high as 20 per cent.

When one considers the factors at work that make possible rupture of the delicate vessels of the brain, it seems likely that the obstetrician has been too severely maligned. Factors over which he has little or no control must be of greater importance than the isolated cases due to unskilled obstetric care. The suction due to negative pressure after rupture of the bag of waters, strangulation due to the cord wrapped around the neck, the overlarge head subjected to prolonged trauma, the small head which does not allow time for sufficient molding are all factors that are largely beyond the control of the medical attendant.

Probably in less than 50 per cent is there a history of long, hard labor or the use of forceps, and brain hemorrhage has occurred with cesarean section. In the diplegic cases the history of difficult labor is probably less than 30 per cent. In this series there was a history of prolonged labor in 39 per cent, with 32 per cent for the diplegic cases.

It is believed by some, in the case of diplegic paralysis, that hemorrhage may not be the cause of the spasticity and mental deficiency. Since the legs are involved so much more frequently than the arms, they believe that something must have happened to check the completion of the motor pattern in these children. They believe that definite nerve fiber groups receive their myelin according to a definite chronological schedule and that the myelin is laid down through the agency of the blood. A possible theory for this failure of development of the motor pattern is an interference with myelinization in the fetus through changes in the blood of the mother, from either some toxic or some endocrine disturbance. In support of this view attention is called to the spasticity and alteration of muscle

A symposium on the care of the spastic patient was prepared by various departments of the Orthopaedic Hospital. Lack of space prevents the presentation of all this material, but the author wishes especially to mention Dr. George H. Patterson of the neurologic, Mrs. Evelyn Tripett of the psychologic, and Miss Ruth Aust of the physical therapy department and to acknowledge free use of the material presented in their papers.

tone that develops in multiple sclerosis when there is loss of myelin sheath that leaves the axis cylinders bare. In support of this view also is the observation in the study here presented that 43 per cent of the patients showed definite endocrine disturbance.

In the accompanying table are given data gathered from this study of 1,000 cases. Because of the size of the series it should be of interest and value to those who are interested in the problems of cerebral birth hemorrhage.

EARLY TREATMENT

The early treatment after birth comes largely within the scope of the neurosurgeon. Early surgery to relieve the hemorrhage has not been very successful. The reason for this, of course, is that too often the hemorrhage is so located that it is inaccessible to surgical approach or the hemorrhage is diffuse and widely separated, and the mortality rate is high. However, many men with experience are reporting worthwhile results from frequently repeated spinal punctures until the fluid is free from blood. In case of dry puncture some men have claimed good results with cisternal puncture.

LATER TREATMENT

Usually the patient does not come to the attention of the orthopedist until the mother notices that the child is not developing as it should. It has been our experience that very little is done for these children during the first few years of life. Even if the mother consults a physician, seldom is an adequate regimen outlined for the parents. Too often they are dismissed with some brief, perfunctory advice, with the result that the parents consult the irregular practitioners of medicine.

Even before the child is old enough to sit or stand there are definite things to be outlined for the parents until it is old enough to benefit from more formal training under direct supervision. But first the physician must have a clear conception in his own mind of what he is trying to accomplish. He must realize that the spastic child lives largely through his senses of sight and hearing, his muscular or motor expression being considerably limited. Yet it is a biologic law down through the ages that man has grown mentally in direct ratio to the skill he has developed in the performance of constructive motor activities. The spastic child is incapable of expressing in a motor way the ideas of his sensory world. His poor coordination is thus made worse, owing to the accumulation of energy, which is spilled over into vicarious channels. No wonder, then, that these children are usually underrated mentally and that so much pessimism prevails. It explains also why so many of these patients improve mentally as their physical handicap improves through training and surgery.

One of the reasons why treatment of these patients has not been more successful is that those in charge of these patients have approached their problem from too narrow a point of view. As mentioned earlier, adequate coping with this problem can be met only by the combined resources of knowledge from several special fields of medicine. We long ago recognized that a team of workers was necessary, a skilled team that was sympathetic with the special needs and requirements of the spastic child, if he was to receive the maximum that medical science has to offer.

It is true that some orthopedic institutions and orthopedic specialists are interested mainly in the surgical aspect of the problem and pay too little attention to the mental, recreational, speech and physical therapy training. On the other hand there are no end of schools for spastic patients that center all their effort in physical therapy training. Many of these schools are manned by competent individuals, at least competent

Statistical Summary of One Thousand Cases of Cerebral Birth Hemorrhage

Age (entered clinic)	6.9 yrs.		
Males	53%		
Females	47%		
Monoplegic paralysis	8.57%	Arm 33%; Leg 67%	
Hemiplegic paralysis	22.4%	Right 56%; Left 44%	
Diplegic paralysis	29%	Arm 7%; Leg 93%	
Triplegic paralysis	1.9%		
Quadriplegic paralysis	20 %		
Myasthenia	1.8%		
Average I. Q. rating 79.7	Monoplegia	80	
	Hemiplegia	88.3	
	Diplegia	74.5	
	Triplegia	68.2	
	Quadriplegia	77.7	
Type of labor	Normal 56%	Monoplegia	30%
		Hemiplegia	40%
		Diplegia	65%
		Triplegia and Quadriplegia	40%
	Precipitate 5%	Monoplegia	10%
		Hemiplegia	4%
		Diplegia	3%
		Triplegia and Quadriplegia	7%
	Prolonged 39%	Monoplegia	60%
		Hemiplegia	56%
		Diplegia	32%
		Triplegia and Quadriplegia	50%
Associated conditions	Contractures	20 %	
	Athetosis	8 %	
	Ataxia	5 %	
	Speech defects (after 6th yr.)	15 %	
	Chorea	0.7%	
	Epilepsy	18 %	Monoplegia 8.2%; Hemiplegia 20 %; Diplegia 22 %; Triplegia and Quadriplegia 30.8%
	Hydrocephalus	1.2%	
	Microcephalus	0.9%	
Average age first walked alone, 2.8 yr. (with or without braces)	Monoplegia	1.5 yr.	
	Hemiplegia	3 yr.	
	Paraplegia	2.9 yr.	
	Triplegia and Quadriplegia	3.7 yr.	
Medical treatment (endocrine and other treatment)		42%	
Shoeing (exclusive of bracing)		20%	
Bracing		38%	
Surgery: total number of operations, 542	Spinal fusions	2	
	Ramisectomies	18	
	Upper extremities	65	
	Lower extremities	457	
Surgery: upper extremity, 65 operations	Neurectomies	6	
	Shoulder tenotomies	1	
	Elbow tenotomies	2	
	Transplant and tenotomy pronator teres	25	
	Wrist transplants	3	
	Wrist arthrodeses	18	
	Underslung thumb deformity	9	
	Finger transplant	1	
Surgery: lower extremity, 457 operations	Femur, torsion osteotomy	1	
	Hip, closed reduction	4	
	Hip, shelf operation	5	
	Adductor tenotomy and neurectomy	64	
	Hip, flexion deformity	6	
	Knee, muscle transplant (weak knee extensors)	11	
	Knee, flexion deformity	11	
	Tibial osteotomy (knock knee and torsion)	9	
	Neurectomy (gastrocnemius muscle)	27	
	Heel cord, plastic lengthening	145	
	Heel cord, plastic shortening	6	
	Tarsal arthrodesis	65	
	Transplants for valgus foot deformity	20	
	Transplant for varus foot deformity	4	
	Flat foot operation	7	
	Bone block for equinus deformity	2	
	Plantar fasciotomy	20	
	Hammer toe	6	
	Toes, transplants for flexion and extension deformity	7	

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in their special field, but they largely or entirely overlook the surgical and bracing opportunities that may be staring them in the face.

These schools will diligently and often expertly train their patients toward better balance and coordination, entirely ignoring contractures that are defeating their efforts. These patients already have difficulty in balance, and unless the flexion deformities of the hips and knees and the equinus deformities of the feet are first corrected by surgery and adequate bracing, they are fighting an uphill battle all the way.

In an attempt to open up and develop every possible avenue of approach, the Orthopaedic Hospital has developed a team which we believe indispensable if the maximum end results are to be obtained.

ROLE OF THE TEAM MEMBERS

The Orthopedic Surgeon.—In this team the orthopedic surgeon is in charge. He makes the initial examination. He evaluates the surgical and bracing possibilities and sees that the patient reaches the various consultants who may be of help.

The Medical Consultant.—On this team is a medical consultant with an interest and training in endocrinology, since a great number of these patients have an accompanying glandular disturbance. Many also have disorders of digestion and elimination and faulty diet habits. Those having foci of infection are referred to the proper department for correction, as an attempt must be made to relieve these patients of every extraneous physical load.

The Dentist.—Because of their poor mastication, many have dental caries and poor occlusion requiring dental care.

The Psychologist.—A very important member is the psychologist, who has had special training with spastic children. He or she can give valuable information on the intellectual level of the patient, his psychomotor skill, his personality deviations and the training possibilities, and he has charge of the mental training. The psychologist is in a position to study personal preferences, desires and ambitions. Thus this department has helped to put the physical therapy training on a sounder psychologic basis. While the exercises attempt to follow definite laws, yet if the desired activity is coordinated with an already discovered ambition—with play, rhythm, music or a definite comprehensible goal in the mind of the child—we have found an unexpected interest that indicates the point of departure toward the next stage of mental training. Many cases could be cited in which there has been a marked improvement in the intelligence quotient rating, accelerated and improved motor function and awakening of the child's interest through the training received in this department. The spastic child is apt to meet frustrations with tantrums. This display of temper and ineffectual response can be altered and improved by the alert psychologist.

The Neurosurgeon.—The neurosurgeon has a definite and useful place on this team. All cases are referred to him for routine examination and to clear up doubtful diagnoses. From this group there will be a small number which will require special neurologic study, consisting of spinal punctures, encephalographies, cranial exploration, section of the skull for oxycephaly, and spinal and ventricular studies for hydrocephalus. The neurosurgeon is in a position to estimate the amount of brain damage and its localization more accurately than others who are not particularly interested in the structure and pathology of the nervous system. In a few cases in which there were localized adhesions and cysts associated with epilepsy, brain surgery has given definite and worth-while improvement. Cases of oxycephaly that show x-ray evidence of increased intracranial pressure are recommended for section of the skull to provide for expansion.

PHYSICAL THERAPY AND OCCUPATIONAL THERAPY DEPARTMENTS

The physical therapist carries on the work of teaching relaxation, rhythm of motion, and gait training. Practically all patients pass through this department, since training of the extremities toward better functional use constitutes a large part of the patient's regimen. The results obtained will depend to a great degree on the skill, resourcefulness, personality and enthusiasm of the technician. Our experience has demonstrated that intensive training is justly rewarded, provided we have a child of from fair to normal intelligence.

The primary aim is to teach relaxation, to teach the patient to do simple things without becoming tense and excited. With the young we start first with the grosser motions of the larger joints, having the mother, in a spirit of play, repeat the motions over and over until the motor pattern becomes fixed.

With the spastic child, even a simple motor act such as reaching for a toy may be a major undertaking. Unlike the normal child, who automatically and without effort uses only the muscles necessary for the act, the spastic child may put all four extremities into play. The object is to teach him to inhibit those muscles not necessary and use smoothly only those necessary for that particular act.

Since we know in advance that certain contractures are apt to occur, we can design exercises that will tend to overcome these overactive muscles. This will mean motions of abduction and external rotation of the shoulder, extension of the elbow, extension of the wrist and fingers, abduction of the thighs, extension of the knees, and dorsiflexion of the feet. These simple exercises can be carried out by the mother until the child has advanced sufficiently, mentally and physically, to benefit by more formal exercises of coordination and gait training in the gymnasium and the warm pool.

The work in the occupational therapy department is of similar character but it has certain advantages in that this type of training seems more like play; it is possible to give greater latitude to the child's preferences and it carries with it the appeal of achievement, an urge to create and the praise that goes with a piece of work well done.

SPEECH TRAINING

In this study about 15 per cent showed speech defects after the sixth year. We have usually begun the speech training with the psychologist along with the mental training. The desire to talk is inherently strong within every one having any degree of intelligence, and we have only to search for a sufficiently powerful motive to effect our purpose. Later when the child has improved through surgery and training, he may be given formal speech training, because now the energy formerly expended in uncontrollable physical motion is available for articulation.

That speech training must be a very necessary part of the training is indicated by the fact that even normal children with speech defects are apt to develop peculiarities of personality and unsocial tendencies. Those

trained in speech work can cite many cases of marked improvement in school work and increase in the intelligence quotient from 10 up to as high as 30 per cent after the speech defect has been overcome. Dull normal children have become normal and suspected high grade morons have become dull normal persons.

THE SURGICAL AND BRACING ASPECT OF THE PROBLEM

It is unfortunate that so many men feel that surgery and bracing play such a small part in the rehabilitation of the spastic child. That it must be a very important part of the problem is indicated by the fact that, in this series of 1,000 cases, 542 surgical operations were performed, in 38 per cent braces of some sort were worn during part of the treatment, and shoe corrections without braces were worn in 28 per cent of the cases. It must be borne in mind that these figures are from an institution which believes and practices that all available avenues of approach must be made use of if the spastic child is to receive the best there is to offer.

It is a common experience in this institution for the physical therapy department to comment on the better results that exist after contractures and overactive muscles are improved through surgery and bracing. The uphill battle has been made lighter and the patient makes faster progress in balance and walking.

I feel that bracing has a very definite place in the treatment of these cases and believe that the use of braces is founded on sound physiologic principles. In the first place they help to stretch the overactive muscles continuously. Secondly, they minimize the number of joints that are brought into play when walking, so that the child just beginning to take steps can focus his attention on fewer moving parts. At the same time they cut down on the number and degree of excursion of vicarious, incoordinated motions when a voluntary act is attempted. Even after surgical procedures such as neurectomies and operations to lengthen short tendons, the overactive muscles will again bring about the original contracture if they are not kept stretched for a long period in braces.

In this series it will be noticed that 457 of the total of 542 operations were performed on the lower extremities. This preponderance of surgery on the legs and feet is accounted for in part by the fact that the lower extremities are more frequently involved, but chiefly it is due to the fact that the surgeon is more concerned, and rightly so, with making a bedridden or wheel-chair patient walk than he is with increasing function of the arms and hands. Not only does this make a lighter burden for the parents but it changes the whole life of the individual and adds a tremendous impetus in the desire to make further improvement.

Experience has shown that some of the operative procedures have not stood the test of time. In the first place it may be mentioned that transplants of spastic muscles are in general disappointing. Tenotomies and plastic lengthening of tendons are usually more satisfactory than neurectomies. Time has shown that little or nothing was accomplished by ramisectomies, which were so in vogue a few years ago.

An examination of these patients made it apparent that the possibilities for improvement in the upper extremity were being somewhat neglected, and examination of patients from other clinics indicates that this is a common tendency. The flexion contracture of the hand and fingers yields to continuous stretching in plaster splints and, if accompanied and followed by training, the function of the hand can be greatly improved. The milder pronation contractures of the forearm likewise yield and improve with stretching in plaster, and the severer ones are greatly benefited by transplant of the pronator teres muscle so that contraction of this muscle effects a supination action. Fusion of the wrist is often a very useful measure, provided the fingers have sufficient grasping function. The underslung thumb deformity in which the thumb opposes across the palm in the way of the other fingers when an attempt is made to make a fist is very annoying. I have tried various transplants without marked benefit. Now I do a complete or partial resection of the nerve supply to the opponens or short flexor muscle of the thumb, followed by immobilization in an attitude of abduction, an operation that has given fair success.

Tenotomies of the adductor muscles of the thigh and neurectomy of the obturator nerves for overactive adductors and scissor gait are operations that have stood the test of time. Overcoming the flexion contracture of the knees, in the milder cases by wedging casts and in the severer cases by capsulotomies, will always be a valuable measure, and it enhances the training possibilities. To improve balance, lengthening of short heel cords followed by bracing is always good surgery.

In my hands, partial or complete resection of the nerve supply to the gastrocnemius muscles for overactive calf muscles without actual shortening has not given as good results as stretching and bracing. Stabilization operations for deformed feet and feet exhibiting uncontrolled, purposeless motions are of definite value. The patient is given a more secure foundation and the thrust of the foot against the ground in walking becomes greater and the force is better controlled after such an operation. Certainly surgery has a prominent place in the rehabilitation of these patients.

COMMENT

Given a child of fair mentality, an intelligence rating of 80 or above, a great deal can be done for these spastic patients under the regimen outlined. In addition to the surgical and training aspect of the problem, one must be alert to the social and economic problems of patients. Because of their limited means of self expression, reticence and inferiority complexes, opportunity should be provided for supervised play and recreation. Formation of self-governing social clubs offer an opportunity for leadership. Drama, music, dancing, art and study clubs are all a vital part of the regimen to round out properly the whole life of the individual. Vocational and scholastic training to prepare the patient for a life's job, within the mental and physical limits of the individual, must be provided. After all, the ultimate objective is not merely to correct and improve deformed bodies but to give to society, as far as possible, a reliant, useful and self-supporting citizen.

2400 South Flower Street.

Muscular Tension When at Rest.—When a person loses weight because of worry or of mentally or nervously hard work, it may be largely because of increased muscular tension, not only during the day but also during the night when there is less sound sleep, and often also because under nervous tension the appetite may be diminished or the digestion disturbed. . . . Even when we are, as we say, completely at rest, there is still tension in all our muscles and a large amount of energy is being spent in maintaining this muscular tension even when it is involuntary and unconscious.—Sherman, H. C.: Food and Health, New York, Macmillan Company, 1934.

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THYROIDECTOMY FOR ANGINA PECTORIS

A CASE OF ANGINA PECTORIS ASSOCIATED WITH NONTOXIC GOITER RELIEVED BY TOTAL ABLATION OF THE LEFT LOBE OF THE THYROID GLAND

J. DEWEY BISGARD, M.D.
OMAHA

Recently there have been published several reports [1] of observations that extend over a period of one year or more on cases treated by total ablation of the normal thyroid gland for angina pectoris and congestive heart failure, unrelated to thyroid disease. The rationale of the treatment is based principally on the results of an experimental investigation carried out by Blumgart and his associates,[2] by which were confirmed certain impressions that had been deduced by many clinicians from the common clinical observation of the change in circulation and cardiac function brought about in thyrotoxicosis by spontaneous, iodine or surgical remission, and in myxedema by thyroid feeding. They demonstrated that the velocity with which blood circulates varies rather constantly with the metabolic rate and is therefore dependent on the metabolic demands of the body. Furthermore, they observed that blood flows much more slowly than normal in cases of cardiac failure which present normal basal metabolic rates. It was reasoned, therefore, that a heart in congestive failure (because it was unable to meet the normal metabolic demands) might establish equilibrium between supply and demand and carry on in compensation at the subnormal metabolic level which results from total thyroidectomy. Furthermore, the same reasoning seemed applicable to cases of angina pectoris, a means to lessen the load on a heart crippled by an impairment of its coronary circulation. This concept had certain clinical precedent. There are on record rare cases in which angina pectoris coexisting with thyrotoxicosis has been relieved by subtotal thyroidectomy. Conversely, patients with myxedema occasionally develop for the first time signs of cardiac failure or of angina pectoris after the administration of thyroid extract and are relieved only after this therapy has been discontinued or quantitatively reduced.

As cases were investigated in which total thyroidectomy had been done, certain interesting facts developed. Among these was the observation that the metabolic rate fell slowly, showing no appreciable reduction for a week or more, and that symptoms of myxedema did not appear until from four to eight weeks after operation. And yet the patients with angina pectoris who were benefited experienced relief from anginal attacks immediately after operation, weeks before the metabolic demands on the heart had been lessened significantly.

It is in respect to this problem of the mechanism by which total thyroidectomy relieves angina pectoris that the following case is reported; also worthy of record are certain unusual features that the case presents:

History.—J. W., a farmer, aged 67, who had always lived in a nongoitrous region, stated that until two years before admission he had always had excellent health. For twenty years he had had a goiter but in his history there was no evidence that he had ever had symptoms of hyperthyroidism. The goiter had not changed appreciably in size, but for four years he had noticed pressure symptoms of choking when he turned his head to the right, and particularly so in recumbency.

For two years he had had attacks of sharp precordial pain, which radiated into the left side of the neck and to the top of the left shoulder. With the pain there was a sense of compression of the chest, inability to breathe, and anxiety. The attacks were invariably initiated by exertion and excitement and were particularly prone to occur with exertion immediately following a meal. They had become progressively more frequent and more severe, until they completely incapacitated him. For three months he had taken glyceryl trinitrate, which gave him immediate and complete relief.

Physical Examination.—The patient was well developed and nourished, was 6 feet (183 cm.) tall, weighed 192 pounds (87 Kg.) and appeared younger than the stated age. The exposed skin surfaces were tanned very deeply and the lips were slightly cyanosed. There was some pyorrhea alveolaris.

Protruding in the neck was an obvious goiter, which to palpation involved both lobes, was firm, nodular and freely movable, and in the aggregate was the size of a large orange. Both lobes appeared to extend substernally.

The chest was barrel shaped; the lungs were emphysematous, with a few atelectatic râles at both bases, and the heart was normal in size and rhythm with a rate of 60 (resting) and a systolic murmur heard over the entire base. To the left of the sternum and extending from the nipple up over the shoulder and base of the neck was an indefinite band of hyperesthesia and hyperalgesia. There was moderate arteriosclerosis, and the blood pressure was 132 systolic, 75 diastolic. The reflexes were normally active and the remainder of the examination was negative.

1. These include:
Blumgart, H. L.; Berlin, D. D.; Davis, David; Riseman, J. E. F., and Weinstein, A. A.: Total Ablation of Thyroid in Angina Pectoris and Congestive Failure: Summary of Results in Treating Seventy-Five Patients During Last Eighteen Months, J. A. M. A. **104**: 17 (Jan. 5) 1935.
Blumgart, H. L.; Riseman, J. E. F.; Davis, David, and Weinstein, A. A.: Treatment of Angina Pectoris and Congestive Heart Failure by Total Ablation of Normal Thyroid: Results in Arteriosclerotic Heart Disease, Am. Heart J. **10**: 596 (June) 1935.
Cutler.[14]
Levine and Eppinger.[10]
Berlin.[4]
Berlin, D. D., and Blumgart, H. L.: Treatment of Chronic Intractable Heart Disease by Total Thyroidectomy, New York State J. Med. **34**: 1047 (Dec. 15) 1934.
Blumgart, H. L.; Berlin, D. D.; Davis, David; Riseman, J. E. F., and Weinstein, A. A.: Treatment of Angina Pectoris and Congestive Failure by Ablation of the Thyroid in Patients Without Thyrotoxicosis, Ann. Int. Med. **7**: 1469 (June) 1934.
Brenner, O.; Donovan, H., and Murtagh, B. L. S.: Total Thyroidectomy in Treatment of Patients with Congestive Heart Failure and Angina Pectoris Without an Anesthesia, Brit. M. J. **2**: 624 (Oct. 6) 1934.
Cutler and Schnitker.[3]
Levine, S. A.; Cutler, E. C., and Eppinger, E. C.: Thyroidectomy in the Treatment of Advanced Congestive Heart Failure and Angina Pectoris, New England J. Med. **209**: 667 (Oct. 5) 1933.
Laurie, G. R.: Is Total Thyroidectomy Rational as Method of Treatment? Canad. M. A. J. **31**: 502 (Nov.) 1934.
Mixter, C. C.; Blumgart, H. L., and Berlin, D. D.: Total Ablation of the Thyroid for Angina Pectoris and Congestive Heart Failure, Ann. Surg. **100**: 570 (Oct.) 1934.
Arnulf, G.: Total Thyroidectomy in Therapy of Decompensated Cardiopathies Without Thyrotoxicosis, Presse méd. **42**: 2044 (Dec. 19) 1934.
Berlin, D. D., and others: Treatment of Angina Pectoris and Congestive Heart Failure by Total Ablation of Normal Thyroid Gland, New England J. Med. **211**: 683 (Nov. 8) 1934.
Blumgart, H. L.; Levine, S. A., and Berlin, D. D.: Congestive Heart Failure and Angina Pectoris: Therapeutic Effect of Thyroidectomy on Patients Without Clinical or Pathologic Evidence of Thyroid Toxicity, Arch. Int. Med. **51**: 866 (June) 1933.
Blumgart, H. L.; Riseman, J. E. F.; Davis, David, and Berlin, D. D.: Therapeutic Effect of Total Ablation of Normal Thyroid on Congestive Heart Failure and Angina Pectoris, ibid. **52**: 165 (Aug.) 1933.
Blumgart, H. L.: Surgical Treatment of Chronic Heart Disease by Complete Removal of the Normal Thyroid, Pennsylvania M. J. **38**: 309 (Feb.) 1935.

2. These studies include:
Blumgart, H. L., and Yens, O. C.: Studies on the Velocity of Blood Flow, J. Clin. Investigation **4**: 1 (April) 1927.
Blumgart, H. L., and Weiss, Soma: Studies on the Velocity of Blood Flow: Pulmonary Circulation Time in Normal Resting Individuals, ibid. **4**: 399 (Aug.) 1927.
Blumgart, H. L.; Gargill, S. L., and Gilligan, Dorothy R.: Studies on Velocity of Blood Flow: Circulatory Response to Thyrotoxicosis, ibid. **8**: 69 (Aug.) 1930. Circulation in Myxedema with a Comparison of the Velocity of Blood Flow in Myxedema and Thyrotoxicosis, ibid. **8**: 91 (Aug.) 1930; Studies on Velocity of Blood Flow and Other Aspects of Circulation in Patients with "Primary" and Secondary Anemia and in Polycythemia Vera, ibid. **9**: 679 (Feb.) 1931.
Blumgart, H. L.: The Velocity of Blood Flow in Health and Disease: The Velocity of Blood Flow and Its Relation to Other Measurements of circulation, Medicine **10**: 1 (Feb.) 1931.

Laboratory Examination.—The urine was acid, had a specific gravity of 1.020 and contained no sugar or albumin; the sediment was negative. The blood showed hemoglobin 90 per cent, red blood cells 5,200,000, white blood cells 5,800, and a differential of 64 per cent polymorphonuclear leukocytes and 36 per cent lymphocytes. The basal metabolic rate was minus 32, and because this initial reading was so low as to cause doubt of accuracy the test was repeated with the result of minus 28. The electrocardiogram was normal except for the bradycardia. Fractional gastric analysis gave normal values for both free and total acid. Blood cholesterol was 173 mg. per hundred cubic centimeters, blood chlorides 421 mg., and fasting blood sugar 104 mg. Dextrose tolerance was reduced; the readings are given in the accompanying table with those obtained after operation.

Operation.—Feb. 21, 1935, with local infiltration anesthesia, both lobes of the thyroid gland were exposed and found to have large substernal prolongations. Both were made up of adenomatous nodules many of which were cystic, and the left lobe was extensively calcified. The right lobe was removed subtotally, leaving only a small remnant, but the left lobe was totally removed, leaving no thyroid tissue whatever on the left side of the trachea. Microscopic changes in the tissue confirmed those apparent in gross examination.

Postoperative Course.—The patient had an uneventful convalescence and from the day of operation until the present writing, a period of eleven months, he has had no attacks of

Dextrose Tolerance Curves

	Before Operation, Mg. per 100 Cc.	After Operation: 2 Weeks, Mg. per 100 Cc.	After Operation: 6 Months, Mg. per 100 Cc.
Fasting	104	78	78
1st half hour	213	177	138
2d half hour	202	218	183
2d hour	232	220	169
3d hour	204	169	121
4th hour	186	129	142

angina pectoris such as he had before operation. On rare occasions and then only with excessive exertion, he has experienced some slight substernal discomfort. Whereas he was completely incapacitated before operation, he has engaged daily in light work on the farm during the past nine months. The area of hyperesthesia and hyperalgesia over the precordium and shoulder noted before operation disappeared immediately after operation and to the present has not returned.

Curiously, two weeks after operation, the basal metabolic rate was minus 18 and the dextrose tolerance curve was relatively normal. The blood cholesterol was 152 mg. per hundred cubic centimeters and the fasting blood sugar 76 mg. The tolerance curve is given in the table. Six months after operation the basal metabolic rate was minus 5 per cent and the dextrose tolerance as given in the table.

COMMENT

As was stated previously, it has been observed constantly that relief in cases of angina pectoris occurs immediately following total extirpation of the thyroid gland. This occurs, as has been shown by Levine and Eppinger [3] and by Blumgart and his associates,[4] several days before there has been an appreciable reduction in the basal metabolic rate, in the velocity of blood flow and presumably in the quantity of circulating secretion of the thyroid gland. This immediate relief is attributed by Weinstein and Berlin and their associates,[5] to interruption of "cardiac afferent nerve pathways" or "afferent nerve impulses from the heart" at the time of operation. They support this hypothesis by observations in nineteen cases in which they were able to demonstrate partial or complete disappearance immediately after operation of both nonanginal precordial pain and of preoperative areas of skin hyperesthesia, and of muscle and periosteal hyperalgesia of the chest wall. After from two to four weeks these signs reappeared with a recurrence of anginal attacks if a sufficient fall in the metabolic rate had not taken place, and they disappeared permanently only with the establishment of an adequate hypothyroid state. Similarly, temporary relief of anginal pain and of hyperesthesia and hyperalgesia occurred in each of three cases in which there had been performed only a total hemithyroidectomy. These changes, however, were limited to the corresponding side of the chest and disappeared permanently only after the other half of the gland had been removed at a second stage. From these observations they were led to believe that the "nerve" relief is only transitory and that permanent relief is brought about by the reduction in cardiac load resulting from lessened metabolic demands.

Levine and Eppinger [6] and Cutler and Schnitker [7] have offered a very different explanation for both the immediate and the permanent relief of attacks of angina pectoris. They believe that total thyroidectomy relieves these attacks by altering the epinephrine effect on the heart. They suggest that the heart is rendered less sensitive to epinephrine for the reason that they found that, whereas the subcutaneous injection of from 0.3 to 1 cc. of a 1:1,000 solution of epinephrine produced severe attacks of angina pectoris in their patients before operation, it produced either no pain or greatly modified attacks when administered as early as twenty-four or forty-eight hours after operation. From a similar investigation Riseman, Gilligan and Blumgart [8] found that the clinical improvement after total thyroidectomy was independent of any change of sensitivity to epinephrine and, contrary to the observations of the former investigators, they could demonstrate no change in sensitivity as judged by the heart rate, the blood pressure, the rate and depth of respiration, the consumption of oxygen, and the blood sugar levels in their patients until they had developed definite clinical myxedema. No mention is made regarding alterations in the pain response. Experimentally, however, Sawyer and Brown,[9] have shown that the tachycardia response to epinephrine in the isolated perfused heart is increased by the addition of thyroxine and is less than normal in the hearts of animals that had previously been totally thyroidectomized.

As further evidence that a reduction in the delivery demands on the heart is not solely responsible for relief of angina pectoris as maintained by Blumgart and his associates, it was found by Levine and Eppinger [10] that

3. Levine and Eppinger.[10] Eppinger, E. C., and Levine, S. A.: Angina Pectoris; Some Clinical Consideration with Special Reference to Prognosis, Arch. Int. Med. **55**:120 (Jan.) 1934; footnote 6.

4. Berlin, D. D.: Total Thyroidectomy for Intractable Heart Disease; Summary of Two and One-Half Years Surgical Experience, J. A. M. A. **105**:1104 (Oct. 5) 1935. Weinstein, Davis, Berlin and Blumgart.[5]

5. Weinstein, A. A.; Davis, David; Berlin, D. D., and Blumgart, H. L.: The Mechanism of the Early Relief of Pain in Patients with Angina Pectoris and Congestive Failure After Total Ablation of the Normal Thyroid Gland, Am. J. M. Sc. **187**:753 (June) 1934.

6. Levine and Eppinger.[10] Eppinger, E. C., and Levine, S. A.: The Effect of Total Thyroidectomy in Response to Adrenalin, Proc. Soc. Exper. Biol. & Med. **31**:485 (Jan.) 1934.

7. Cutler, E. C., and Schnitker, M. T.: Total Thyroidectomy for Angina Pectoris, Ann. Surg. **100**:578 (Oct.) 1934.

8. Riseman, J. E. F.; Gilligan, Dorothy R., and Blumgart, H. L.: Treatment of Congestive Heart Failure and Angina Pectoris by Total Ablation of Normal Thyroid Gland; Sensitivity of Man to Epinephrine Injected Intravenously Before and After Total Thyroidectomy, Arch. Int. Med. **58**:38 (July) 1935.

9. Sawyer, M. E. M., and Brown, M. G.: Effect of Thyroidectomy and Thyroxine on Response of Denervated Heart to Injected and Secreted Adrenine, Am. J. Physiol. **110**:620 (Jan.) 1935.

10. Levine, S. A., and Eppinger, E. C.: Further Experiences with Total Thyroidectomy in Treatment of Intractable Heart Disease, Am. Heart J. **10**:736 (Aug.) 1935.

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in certain of their cases presenting congestive heart failure the rate of blood flow was unaltered by total thyroidectomy despite the development of myxedema and of clinical improvement. To add further confusion to this controversial subject, Lyon and Horgan [11] have reported five cases of angina pectoris unassociated with thyroid disease in which prolonged and, up to the time of their report, permanent relief had resulted merely from ligation of the superior and inferior thyroid arteries on both sides. One patient had had no attacks of angina pectoris for ten months, one for five months, and three for more than three months. In the first case the basal metabolic rate had receded from plus 5 to minus 13. They attribute the relief in their cases to two factors: (1) a lowering of the metabolic rate from diminution in the blood supply of the gland, and (2) interruption of the sympathetic stimuli to the gland and of the intercommunicating nerve pathways between the gland and the heart.

In the light of the foregoing information an attempt will be made to analyze the mechanism of relief in my case. This patient presents an unusual clinical picture of angina pectoris associated with an old substernal degenerated adenomatous goiter and with a hypometabolic state without symptoms of myxedema. Undeniable is the possibility that the very low preoperative metabolic rate of minus 32 was inaccurate. It was measured, however, in an excellent laboratory and repeated with approximately the same result. In consideration of this low rate it seemed unwise to deprive the patient totally of thyroid tissue, and since the pain had always been confined to the left side it seemed probable in the light of the experience of Lyon and Horgan [11] that it might be relieved by subtotal thyroidectomy, the left lobe, however, being removed completely. This procedure gave not only immediate but also prolonged (now eleven months) relief from angina pectoris, and the relief developed not as a result of hypothyroidism but rather in the presence of sufficient thyroid tissue to maintain a normal metabolic rate.

In the discussion that follows, it should be emphasized that there has been no intent to draw conclusions with general implications. Such conclusions cannot be made from a single case, nor can the clinical picture and results in this unorthodox case be compared directly with those investigated by Blumgart, Cutler, Levine and their associates, in which cases the thyroid glands were normal. For instance, it is possible, though I believe unlikely, that the attacks of angina pectoris in this case were caused by pressure from the substernal portion of the goiter on nerves or other structures in the anterior superior mediastinum and that release of this pressure brought about relief. Again, relief may have resulted merely from the removal of the large mass of abnormal thyroid tissue. Coller [12] has observed that certain cardiac irregularities in cases presenting nontoxic goiters disappeared after subtotal thyroidectomy, although the metabolic rates remained normal.

No determinations were made of the rate of blood flow before or after operation, but if the metabolic rate is an index to the rate of flow, as stated by Blumgart, it is reasonable to assume that the velocity was increased rather than decreased. Disregarding this speculation, the fact remains that there has been prolonged relief in the presence of a normal metabolic rate and that a reduction in the metabolic demands on the heart has played no part.

Interruption of the sympathetic nervous innervation of the left lobe of the gland obviously was accomplished at operation, and if this represents the mechanism of relief in this case it differs from that observed by Weinstein and his associates.[5] As in their cases in which hemithyroidectomies had been done, there was an immediate loss of the preoperative hyperesthesia and hyperalgesia of the thoracic wall, but in my case these abnormal sensory manifestations and attacks of angina pectoris did not return in a few weeks and have not recurred to date (eleven months).

It has been suggested that there exists direct nervous communication between the heart and the thyroid gland independent of the sympathetic or other nerve trunks and that these pass from the heart upward in the adventitia of the aorta, innominate carotid, and superior and inferior thyroid arteries. Only by virtue of some such mechanism could one rationalize the prolonged relief of angina pectoris in the case here presented and in the cases reported by Lyon and Horgan on a basis of interruption of nervous impulses. In assuming that the operation merely interrupted communications between the gland and the cervical sympathetics, one has difficulty in comparing the results in these cases with those obtained from the extensive operation of cervical sympathectomy as devised by Jonnesco.[13]

No studies of sensitivity to epinephrine were made in this case, and for an obvious reason. However, since there was at all times sufficient circulating thyroid secretion to maintain a normal metabolic rate, the theory of relief of angina pectoris from a reduction of sensitivity to epinephrine, as advocated by Levine, Cutler and their associates,[14] seems inapplicable. It is probable that some change did occur in the interrelationship of the thyroid and adrenal glands, and equally probable in the interrelationship of all members in the endocrine system. In support of this contention are the changes that occurred after operation in the metabolic rate (an elevation from minus 30 per cent to minus 5 per cent) and in the metabolism of sugar, which shifted from preoperative abnormality to postoperative normality. That the pituitary and adrenal glands are capable either directly or indirectly of exerting a profound influence on both the general metabolic rate and the metabolism of sugar is supported by much clinical and experimental evidence. Also there is increasing evidence that there is a close interrelationship between the functions of the sympathetic nervous system and the endocrines, particularly those glands which have with the sympathetic nervous system a common embryologic origin. Since endocrinology lends itself so readily to romantic fancy, it seems not out of place to suggest that a part of the cardiac benefit from total thyroidectomy results from a change in the state of the general vascular bed, the tone of which is controlled by the adrenals and sympathetic nervous system. This is suggested in the words of Levine and Eppinger: [10] "the essential change [as the circulation and cardiac function in congestive failure improve] being an improvement in the back pressure factor, i. e., diminution of venous or pulmonary engorgement."

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11. Lyon, J. A., and Horgan, E.: Dissociation of the Thyroid from the Sympathetic Nervous System and Reduction of the Blood Supply of the Thyroid in Angina Pectoris, South. M. J. 27:985 (Dec.) 1934.
12. Coller, F. A.: The Morbidity of Endocrine Goiter, J. A. M. A. 82:1745 (May 31) 1924.
13. Jonnesco, T.: La resection du sympathique dans l'angine de poitrine, Presse méd. 31:517 (June 9) 1923.
14. Cutler, E. C.: Total Thyroidectomy for Heart Disease, Minnesota Med. 18:421 (July) 1935. Cutler and Schnither,[7] Eppinger and Levine (footnotes 3 and 6).

INFECTIVITY OF THE SPINAL FLUID IN LYMPHOGRANULOMA INGUINALE

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Because of the usual location of its primary lesion and its close epidemiologic relation to sexual life, lymphogranuloma inguinale must be grouped with the venereal diseases. Whether the infection in human beings leads to a systemic disease or whether it produces only local lesions is of vital importance to its proper evaluation and the planning of appropriate therapeutic measures.

It has been shown by numerous experiments that inoculation of infectious material into various animals will frequently produce general dissemination of the virus with the appearance of lesions remote from the site of inoculation.[1] While numerous reports maintain the frequency of extragenital lesions—skin, joints, eyes, meninges—during the course of the disease in man, no definite proof exists that such lesions are directly ascribable to the virus. On the other hand, the history of the average patient suffering from lymphogranuloma inguinale suggests in many respects the presence of a generalized infection. During the acute stage of the disease we have encountered quite regularly severe constitutional symptoms, such as fever up to 100 F. or higher accompanied by chills, weakness, anorexia, profuse night sweats, and violent headaches. In the literature the importance of the initial rise in temperature has been repeatedly stressed as a valuable aid in distinguishing lymphogranuloma inguinale from other local venereal lesions.[2] Of equal importance, although not sufficiently emphasized, is the early occurrence of headaches. The pain is usually described as dull, pressing in character, principally in the upper part of the forehead, radiating occasionally into both temples and into the eye sockets. Sometimes it is accompanied by vertigo and nausea, forcing the patient to remain in bed. Sensitivity to light with marked conjunctivitis and occasional stiffness of the neck with pains radiating toward the back of the head in our experience have also been encountered quite frequently.

Animal Passage of Virus Recovered from Glands and Spinal Fluid.

Protocol	Character and Duration of Lesions	Diagnosis: Frei Reaction	Diagnosis: Biopsy	Evidence of the Virus in: Bubo	Evidence of the Virus in: Spinal Fluid
27	Right inguinal bubo, nine days	Positive	Positive	Positive 5 passages	Positive 14 passages
36	Bilateral inguinal bubo, one month	Positive	Positive	Positive 5 passages	Negative 3 passages
43	Left inguinal bubo, eight days	Positive	Positive	Positive 4 passages	Negative 3 passages
42	Left inguinal bubo, ten days	Positive	Positive	Positive 10 passages	Positive 3 passages
46	Right inguinal bubo, five days	Positive	Positive	Positive 3 passages	Negative 3 passages
44	Right inguinal bubo, two weeks	Positive	Positive	Negative 0 passages	Negative 3 passages
48	Left inguinal bubo, four days	Positive	Positive	Positive 8 passages	Negative 3 passages
52	Bilateral inguinal bubo, two weeks	Positive	Positive	Positive 5 passages	Negative 2 passages

The headaches observed with such regularity in the acute stage of the infection suggested to many authors some type of cerebral involvement during the initial phase of the disease. This naturally led to investigation of the spinal fluid. Ravaut and Scheikevitch [3] could not detect any changes in the spinal fluid. Midana and Vercellino [4] found positive Pandy and Nonne reactions, with increased cell counts in two of eleven fluids examined. Kitagawa's [5] interesting finding of marked increase in the intraspinal pressure could not be confirmed by Chaigneau [6] or Espildora and Coutts.[7] Coutts, Landa Perroni and Martini Herrera [8] report inconclusive results with complement fixation tests on spinal fluids, using an antigen prepared from excised buboes. Because of the apparent conflicting results obtained by various authors, we decided to study the spinal fluid in a series of acute cases of lymphogranuloma inguinale and to attempt by means of animal experimentation to prove or disprove the presence of the virus in the spinal fluid.

For our studies we selected only patients in the acute stage of the disease. They all presented in a greater or less degree the aforementioned characteristic constitutional symptoms of fever and headache and had suffered with painful inguinal buboes for from a few days to two weeks. Each gave a strongly positive Frei reaction and a negative blood Wassermann reaction, and adenectomy was done in each case. Intracerebral inoculation of 10 per cent emulsions of excised buboes into white mice revealed in all cases the presence of the virus, and the histopathologic picture of the excised gland was in all instances typical of the disease. Spinal fluid from these patients was inoculated intracerebrally in 0.01 cc. portions into white mice. Some of the animals were killed after two weeks for further animal passage and histologic examination of their brains. Others were kept under observation until the onset of the characteristic symptoms. In all cases inoculation of gland emulsions resulted in the production of typical clinical and histopathologic changes. In two of the cases inoculation of the spinal fluid was followed by similar changes. The viruses recovered from the glands and the spinal fluids were carried through several animal passages as indicated in the accompanying table, the strain recovered from the spinal fluid in case 27 still being carried for further biologic studies. Brain emulsions from the animals successfully inoculated with the spinal fluid from patients 27 and 42 gave strong cutaneous reactions in patients infected with lymphogranuloma inguinale.

COMMENT

In a previous communication we discussed the possibility of lymphogranuloma inguinale being under certain conditions a systemic infection in man. On the basis of our own clinical and experimental observations and of data available in the steadily mounting literature, we concluded that there is much evidence at least suggestive of frequent generalized dissemination of the virus during the early stages of the disease. In a recent paper Coutts,[9] who is the outstanding investigator of this disease in South America, takes a similar point of view and even goes so far as to divide the disease into

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three distinct periods or stages similar to those noted during the evolution of syphilis. According to him, the time elapsing between infection and the appearance of the primary lesion must be regarded as the primary incubation period and may extend up to three weeks. This is followed by a secondary period characterized by the appearance of constitutional symptoms, inguinal buboes and occasionally generalized lymphadenitis, skin lesions, conjunctival lesions and anemia. Lesions of the tertiary period are elephantiasis of the genital organs, ulceration of the vulva (esthiomene) and rectal stricture. Although we are inclined to consider the conclusions of Coutts premature on the basis of the available clinical observations on the various manifestations of the disease, we cannot deny that such a concept may yet prove correct.

Our successful demonstration of the virus in the spinal fluid of infected patients certainly proves that dissemination of the virus in the human body actually occurs. Study of the spinal fluid in a large number of cases alone will prove whether this reported observation must be regarded as the rule or as an exception during the course of the disease. Even should the latter prove true, our observations give a firmer basis to the incrimination of the virus as the causal agent of the cerebral manifestations occurring during the course of lymphogranuloma inguinale, as described in increasing frequency by continental authors.

USE OF THE FEMALE BITTERLING AS A TEST FOR MALE HORMONE

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In 1934 Kanter, Bauer and Klawans [1] reported a new biologic test for hormones in pregnancy urine. The title as well as the text intimated, although it did not positively assert, that the procedure might be useful in diagnosing pregnancy. The technic requires the addition of a small amount of the suspected urine to an aquarium containing a female bitterling. These fish possess an ovipositor which in the quiescent state is from 2 to 5 mm. long. A positive reaction is denoted by an elongation of the ovipositor to a length of about 25 mm. The simplicity of this test aroused widespread interest, and many workers desired to use it, believing that it was a test for pregnancy.

However, it was demonstrated [2] that this remarkable phenomenon is not a pregnancy test, since distinctly positive reactions were obtained with some urines from males, nonpregnant females and women in the postclimacteric period. Furthermore, pregnancy urines did not all give positive reactions.

It was thus evident that some factor present in a wide variety of urines not solely related to pregnancy was responsible for the ovipositor test. This conclusion has been corroborated by various workers in other laboratories. We have also found that a larger percentage of male urines will react than we had first reported. In fact, every normal male urine recently tested has proved positive if a large enough dose of urine could be used without harming the fish.

In the attempt to determine the cause of this phenomenon we have tested many substances, including crystalline theelin and theelol [3] as well as various proprietary. hormone preparations, including a number estrogenic in nature. As a result of these tests we arrived at the hypothesis that the responsible factor was not one of the female sex hormones but one of the so-called male hormones.

This is a more logical hypothesis than would at first thought seem to be the case. Since the ovipositor stimulating substance or substances are added to the water in which the female fish swims, it would appear that she reacts to a hormone contributed from a source outside her own organism. That this source might be a male bitterling would seem likely, since the lengthening of the ovipositor occurs normally as a part of the reproductive cycle in the spawning season and when the female is in close association with the male. We have never noticed spontaneous ovipositor lengthening during the breeding season when the females were kept segregated from the males. When the breeding season occurs, it is probable that the male secretes his hormone and excretes it into the water near the female. She is thereby stimulated to react by a lengthening of the ovipositor, through which the ova pass when being deposited at their natural site. This hormone mechanism would insure the presence of a male in the neighborhood of the female at spawning time. Naturally this hypothesis presupposes that the male hormone of the fish and that of man have similar activity. In brief, the male hormone furnishes the necessary stimulation to induce ovipositor elongation in the female.

The following is an outline of a typical experiment, which indicates that the idea is correct: Eighteen liters of mixed male urine was treated according to the methods of Funk, Harrow and Lejwa,[4] Butenandt and Tscherning,[5] and Kochakian and Murlin,[6] yielding two fractions: (*a*) containing male hormone and (*b*) containing female hormone. Portions of *a* and *b* were emulsified and added in varying doses to aquariums containing female bitterlings in the quiescent stage. Positive reactions with the fish were obtained only with the male fraction (*a*). As confirmatory evidence that *a* contained the male hormone, it was injected in oil solution into a capon. It produced the well known comb and wattle growth. The other fraction (*b*) did not have this effect on the capon. Oil solutions of *a* and *b* were also injected into immature mice. Both fractions caused estrus. However, it has been shown by several investigators [7] that the male hormone has estrus-producing properties when concentrated.

It is thus evident that the male hormone present in male urine, presumably androsterone, produces the ovipositor lengthening reaction in the female bitterling.

Read before the New York Endocrinological Society at the New York Academy of Medicine, Jan. 29, 1936.

From the Department of Physiology and Biochemistry of the New York Homeopathic Medical College and Flower Hospital.

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The anterior pituitary-like hormone does not give this test. Fractions containing theelin and theelol, and these crystalline hormones themselves, do not give this reaction or do so in a very slight degree.

We suggest the use of this reaction as a new test for male hormone. It is extremely simple, inexpensive and time saving. A positive reaction is usually seen at the end of from eighteen to twenty-four hours. Sometimes the ovipositor continues to grow during the second twenty-four hours.

In order that the test may be used in a uniform manner by all, we suggest a procedure and at the same time define a unit as follows: One bitterling unit is the smallest amount of material which, when added to an aquarium containing two female bitterlings in 4 liters of water, will cause marked lengthening of the ovipositor (to the end of the anal fin or beyond) in at least one of the two within forty-eight hours. Other necessary conditions are: (1) the fish must have been in the test aquarium for from eighteen to twenty-four hours before the suspected material was added, and (2) at least half of the water used should be taken from the stock tank.

COMMENT

The simplicity of the bitterling test should make it of great value in the isolation and purification of male hormone. It should also aid in the establishment of a definite clinical diagnosis of many endocrine disorders.

The details of this work will be published in another journal in the near future.

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AN INSTITUTIONAL OUTBREAK OF EPIDEMIC JAUNDICE

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In October 1934 an outbreak of jaundice occurred among the students attending a religious novitiate in St. Louis County. Permission to investigate this outbreak was granted by the state health officers when two cases were hospitalized in a St. Louis Hospital. Since epidemic jaundice is not reportable, we have no authentic information regarding the occurrence of similar outbreaks.

The school consists of 132 male students divided into three groups: sixty-two juniors, aged between 16 and 17 years; thirty-six seniors, aged between 19 and 20 years, and thirty-four scholastics, aged between 21 and 22 years. The groups are separated in that they have different dormitories, refectories and class rooms. Contact between them is nil except on Sunday, when members of the same family alone may meet. All groups attend chapel daily but each group is kept separate. The routine housework is done by the students themselves.

The outside help consists of those employed in the kitchen, a carpenter, an engineer, a chauffeur, two tailors, and a bookkeeper. The chapel is open to the public, but services are not attended jointly by the outsiders and the students. There is a separate entrance for the outsiders.

From the Laboratory Section of the St. Louis Health Division. The authors were assisted by Dr. Joseph Grindon in the collection of clinical data.

EPIDEMIOLOGY

There are four sources of water supply available to the institution, two springs in shallow limestone and two deep drilled wells. The spring water is used only to fill the swimming pool and cannot be pumped through the distribution system. The two deep wells are so located and installed that apparently there is no opportunity for contamination entering the top of the casing. From the wells the water is pumped to an elevated storage tank located on a hill above the institution. The storage tank is constructed of masonry walls extending above and below the ground. The cover of the tank is constructed of wood and provided with a screened ventilator, the top is not tight enough to prevent aerial pollution, and there are openings between the roof and the masonry walls large enough to admit small animals.

The grounds of the institution were well kept; all the buildings were in a good state of repair, and sewage was disposed of through a water carrying system. There were a few rats on the premises but there was no unusual increase in the rat population noticed at the time of the epidemic. The institution was free of blood sucking insects, and there had been no complaint on the part of the students during this time of having suffered insect bites.

During the month of August 1934 the junior students were away on their vacation and the senior students had just completed an eight-day retreat during the latter part of this month. September 1 the first case of jaundice appeared in a senior student. Inspection of table 1 reveals the occurrence of another case on September 2, two on the 4th, and one each on the 10th and 29th. One case occurred on October 10, 17 and 25, and the last on November 7, making a total of ten cases.

It was not until September 23 that the first case occurred among the scholastics. Additional cases occurred September 24 and 28, October 1 and 4, and November 6. Sixteen cases of jaundice occurred among the junior students. These cases occurred between October 7 and December 9.

In all, thirty-two students, or about 25 per cent of the entire student body, became jaundiced. In addition to these cases, six junior students presented similar symptoms except for the absence of jaundice. Only one older adult, an instructor, out of a total of sixty-eight, became jaundiced, but unfortunately he was absent during the course of the investigation. Table 2 gives the case rate of epidemic jaundice according to the groups.

A child of one of the help residing near the institution who attended services at the chapel likewise developed jaundice. A detailed report of this case was never obtained. This is the only authentic instance of jaundice appearing in an outsider.

SYMPTOMATOLOGY

The disease was relatively mild in the majority of cases. In typical cases there was a slight initial elevation of temperature, with several days of nausea, vomiting, anorexia, abdominal pain, constipation, clay colored stools, and bile stained urine. In some cases a hard chill initiated the illness. Jaundice was universally present in the cases analyzed and usually appeared between the first and the fourth day; in four instances it occurred on the seventh and eighth day and in one on the twelfth day. Icterus of the sclera alone was noted in a few cases. As a rule, however, the jaundice

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was widespread and varied from a light yellowish brown to a deep brown tint. The duration of the jaundice extended from three days to twenty-two days, disappearing most commonly between the seventh and tenth days.

Abdominal pain localized to the right upper quadrant was a common complaint. The spleen was palpable in only three out of seven cases that we examined. The fever ranged from 99 to 104 F. Weakness and prostration were common complaints and often continued through convalescence. Loss of weight in a few students was quite striking. The illness lasted from a few days to four weeks. No deaths occurred during the outbreak. The blood picture showed a mildly infectious condition.

Only two patients were hospitalized, the remainder being treated at the school by school physicians. Detailed routine clinical laboratory examinations could not be made because of the lack of proper facilities. Table 3 gives a list of the symptoms noticed and the number of cases exhibiting them.

TABLE 1.—*Date of Onset of Epidemic Jaundice and Weekly Distribution of Cases According to Groups*

	Group (Week That Ended)																			
	September					October				November					December					
	7	14	21	28	30	7	14	21	28	31	7	14	21	28	30	7	14	21	28	31
Juniors	0	0	0	0	0	1	4	4	2	1	1	1	0	0	0	0	1	0	0	0
Seniors	1	1	0	0	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0
Scholastics	0	0	0	2	1	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Total	1	1	0	2	2	3	5	5	4	1	3	1	0	0	0	0	1	0	0	0

The clinical picture, we felt, suggested the possibility of Weil's disease. In order to establish this diagnosis it was necessary to demonstrate Leptospira icterohaemorrhagiae.

LABORATORY INVESTIGATION

Guinea-pigs were chosen as the experimental animal. In this connection Topley and Wilson [1] state: "Leptospira icterohaemorrhagiae is highly pathogenic for guinea-pigs whether administered intraperitoneally, subcutaneously, cutaneously or by mouth . . . resulting in an illness lasting five to twelve days and terminating in death."

In only four cases were we able to obtain blood specimens in the first seven days of the disease. It was not considered worth while to make animal inoculations with blood specimens after the tenth day. Forty-eight specimens of urine and eight specimens of saliva

TABLE 2.—*Case Rate of Epidemic Jaundice According to Groups*

	Juniors	Seniors	Scholastics	Total or Average
Ages, years	16-17	19-20	21-22	...
Number of students	62	36	34	132
Cases	16	10	6	32
Rate	25.8	27.7	17.6	24.2

were studied by darkfield examination and by guinea-pig inoculations. All darkfield examinations were negative for organisms of the Leptospira group and none of the guinea-pigs developed any symptoms of jaundice. Postmortem examinations of animals dying and those killed failed to show pathologic changes indicative of infection with Leptospira icterohaemorrhagiae. Repeated examinations of urine specimens of inoculated guinea-pigs failed to show Leptospira. Guinea-pigs inoculated were killed at intervals of from eight to ten days, and various organs were macerated and reinoculated into other pigs. Negative results were obtained in all cases. Centrifugated specimens

TABLE 3.—*Frequency of Symptoms in Thirty-Two Cases of Epidemic Jaundice*

Symptoms	Cases
Fever	25
Nausea	21
Vomiting	21
Chills	17
Headache	16
Weakness	14
Anorexia	9
Vertigo	7
Pain in calf muscles	6
Generalized body aches	5

of the institution's water supply were studied by darkfield examination and by guinea-pig inoculation with negative results.

WATER FROM HOLY WATER FONTS

A total of nine specimens were collected from fonts [2] serving both students and transients, located in five different places in the institution. All these samples showed organisms in great numbers, identical in morphology and motility with Leptospira icterohaemorrhagiae. In this regard Buchanan [3] reports having produced fatal jaundice in guinea-pigs with Leptospira isolated from roof slime of a coal mine. Hindle [4] isolated spirochete-like organisms from London drinking water thought to be mildly pathogenic for guinea-pigs.

Efforts were made to infect guinea-pigs with the organisms we isolated. Guinea-pigs were inoculated

TABLE 4.—*Number of Guinea-Pig Inoculations Made with Specimens from Cases of Infectious Jaundice and from Water Supply*

Material	Number of Inoculations
Human urine	50
Human blood	12
Human saliva	6
Water and water culture material	69
Guinea-pig urine	10
Guinea-pig autopsy material	24
Total	170

with these organisms intraperitoneally, intracardially, intracutaneously, intranasally, by ingestion and by ocular instillation. Scorbutic pigs were inoculated, also pigs that had received intramuscular inoculation with irritants. In no instance were we able to establish infection. Efforts were made to enhance the virulence by cultural methods in rabbit's serum and by serial transfers from animal to animal. These tests were negative. No serologic studies were made in connection with this investigation and no rats from the affected area were submitted for examination. A summary of the extent of the laboratory work in connection with this outbreak is given in table 4. This table does not include oral, nasal and conjunctival inoculations. Darkfield examination of the water from

1. Topley, W. W. C., and Wilson, G. S.: The Principles of Bacteriology and Immunity, New York, William Wood & Co. 2: 1200, 1930.

2. Cup containing a sponge saturated with holy water.

3. Buchanan, George: Spirochaetosis Icterohaemorrhagiae, Brit. M. J. 2: 990 (Nov. 29) 1924.

4. Hindle, Edward: Leptospira in London Water, Brit. M. J. 2: 57 (July 11) 1925.

fonts after the epidemic had subsided continued to show Leptospira, although the organisms were decidedly fewer in number.

COMMENTS

Outbreaks of epidemic jaundice have been reported in practically all states in the union. In many instances they were described as outbreaks of Weil's disease without complete laboratory proof being established. That certain forms of Leptospira found in stagnant water may produce a mild infection in epidemic form was postulated by Noguchi. Towler and Walker [5] found only six cases of infectious jaundice in the United States between 1922 and 1926 in which Leptospira icterohaemorrhagiae was demonstrated.

Many authors agree that epidemic jaundice is due to some factor not recognized at the present time. Hiscock [6] described an outbreak similar in many details to ours, occurring in sixty-nine Yale students. He was unable to demonstrate the etiologic agent. He concluded that these cases originated in contact infection either by direct transfer from person to person or in some instances by infection of eating utensils. Wadsworth,[7] reporting the occurrence of infectious jaundice in New York State, did not find Leptospira icterohaemorrhagiae in eighty-seven specimens of urine and thirty-six specimens of blood by guinea-pig inoculations. Waters [8] reported a series of 150 cases of jaundice in which the laboratory studies were negative.

Blumer [9] reviewed the status of infectious jaundice in the United States and noted that:

1. Seventy-two per cent of the epidemics occurred during the fall and winter months and only 10 per cent appeared in summer.

2. The disease primarily involves the childhood and young adult population. In 70 per cent of the epidemics, children and young adults alone were affected.

3. The spread of the disease occurs by direct contact. Rats were implicated but in some epidemics rodents were not found.

The chief interest in the outbreak being reported centered on the finding of Leptospira in the holy water fonts. The sanitary condition of the fonts was promptly improved, with the resultant sudden cessation of cases. One month later, however, one more case developed in a boy whose duty consisted of replenishing the holy water in the fonts. There were no additional cases.

Leptospira was found in large numbers in the fonts located at both the transient and the student entrance to the chapel. Since the chapel was used by all members of the institution in common, it is difficult to minimize the importance of this observation. It is entirely possible that the epidemic was subsiding at the time the fonts were disinfected and that the finding of Leptospira was of no significance. Direct contact undoubtedly played a rôle, but to what extent is open to conjecture. A fact which cannot be overlooked is our failure to reproduce the disease in guinea-pigs. What rôle Leptospira played in the dissemination of the disease is difficult to ascertain.

CONCLUSIONS

In an outbreak of jaundice involving thirty-two students out of a total of 132, Leptospira morphologically identical to Leptospira icterohaemorrhagiae was readily demonstrated in samples of water removed from holy water fonts. Attempts to reproduce the disease in guinea-pigs in which water from the fonts, blood, urine and saliva from patients were used were unsuccessful.

When the sanitary condition of the fonts was improved, the epidemic subsided. The relationship of Leptospira to the dissemination of the outbreak cannot be ascertained. It would seem that this epidemic was of nonleptospiral origin.

5. Towler, H. H., and Walker, J. E.: Spirochetal Jaundice, J. A. M. A. 89:56 (July 9) 1927.
6. Hiscock, I. V., and Rogers, O. F.: Outbreak of Epidemic Jaundice Among College Students, J. A. M. A. 78:488-490 (Feb. 18) 1922.
7. Wadsworth, Augustus; Langworthy, H. Virginia; Stewart, F. Constance; Moore, Anna C., and Coleman, M. B.: Infectious Jaundice Occurring in New York State, J. A. M. A. 78:1120 (April 15) 1922.
8. Waters, S. C.: J. Indiana M. A. 15:430-434 (Dec.) 1922.
9. Blumer, George: Tr. A. Am. Physicians 38:189, 1923.

INVOLVEMENT OF THE NERVOUS SYSTEM IN TRICHINIASIS

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It has been known for some years that the nervous system may be involved in cases of trichiniasis, but to date there have been few reports in the literature. Recently two patients with neurologic complications of trichiniasis were seen in the neurologic unit of the Boston City Hospital. The diagnosis in these cases was made with great difficulty. We thought it would be advisable, therefore, to report these cases and give a brief review of the literature.

REPORT OF CASES

CASE 1.—*Seventeen year old girl with mental confusion, delirium, spastic left hemiplegia and flaccid paralysis of the left shoulder girdle; recovered.*

History.—A. B., a white girl aged 17 years, of Lithuanian parentage, was perfectly well until Aug. 17, 1935, when she noted that her eyelids were swollen and that the eyes were "bloodshot." This condition of the eyes lasted for about one week. No further symptoms were noted until August 27, when she complained of stiffness of the neck. August 30 she suddenly collapsed owing to weakness of the left leg and was put to bed, acutely ill with fever, nausea, vomiting, headache, and pains in the back of the neck and in the lumbar region. August 31 she was delirious and mentally confused, and a flaccid paralysis of the left arm was noted. The family physician made a tentative diagnosis of acute anterior poliomyelitis and sent the patient to the contagious ward (South Department) of the Boston City Hospital, September 2.

The patient was well developed and well nourished, and appeared to be acutely ill. She lay quietly in bed in a semistuporous condition but responded readily to questions. She was imperfectly oriented as to time and place and her memory for recent and remote events was impaired. There was incontinence of urine and feces. The vital signs were negative, as was the examination of the skin, ears, nose, throat, lungs, heart and abdomen. She was seen by us September 3 and was transferred to the neurologic unit. At that time the neurologic examination showed a slight weakness of the left lateral gaze, an impairment of convergence and upward and downward gaze, and a moderately severe left hemiplegia of the cerebral type involving the leg, arm and lower half of the face. In addition there was a complete flaccid paralysis of the muscles of the left shoulder girdle, apparently of a lower motor neuron type. This flaccid paralysis was greatest in the scapular, the deltoid, the pectoral and the triceps muscles on the left. There was a moderate weakness of the biceps muscle and the muscles of the forearm, wrist and hand on the left. There were no subjective sensory symptoms, and no objective sensory changes were demonstrated. There was no tenderness of the muscles or of the nerve trunks. The biceps and triceps reflexes were absent on the left side and normally active on the right. The radial periosteal reflex was diminished on the left. The knee

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and ankle jerks were hyperactive on both sides, but more so on the left. There was a sustained ankle clonus on the left and an unsustained ankle clonus on the right. Babinski's toe sign was present on both sides, and no abdominal reflexes could be obtained.

Laboratory Data.—The examination of the urine was negative. The blood count showed 4,000,000 red cells and 82 per cent hemoglobin. The white cells in the blood were counted daily between September 2 and September 14. The total count varied between 8,800 and 12,800 per cubic millimeter. Smears of the blood, which were stained with Wright's stain, contained between 0 and 44 per cent eosinophils. The first smear contained no eosinophils, the next two 6 per cent and 8 per cent, respectively. All subsequent smears contained more than 20 per cent eosinophils. The blood Kahn reaction was negative. Lumbar puncture on September 2 yielded a clear, colorless, cell-free fluid under a pressure of 180 mm. of water. The colloidal gold and Wassermann tests were negative, and on chemical analysis the fluid contained 17 mg. of protein, 54 mg. of sugar and 719 mg. of sodium chloride per hundred cubic centimeters. The lumbar puncture was repeated on September 6 and September 9. The condition in the fluid removed on these occasions was similar to that previously recorded. No trichinae were found in any of the fluids. The examination of the feces was negative. The electrocardiogram, September 13, showed a T wave with an abnormally low amplitude suggesting myocardial involvement. Biopsy of the left pectoral muscle showed an inflammatory and degenerative process. Many eosinophils were in the inflammatory exudate, but trichinae were not found in the small piece examined. The skin test for trichiniasis was positive, September 9 and 18. The electrical reaction of the muscles of the left arm was normal, September 10.

Course.—There was a rapid improvement of the general condition, and five days after admission the patient was mentally clear and was continent of urine and feces. The weakness of the left arm gradually decreased, as did also the left hemiplegia. She was discharged from the hospital September 18 (sixteen days after admission), walking with a slight limp. The reflexes were still hyperactive in the left leg with ankle clonus and Babinski toe response. The strength of the left arm was almost normal and the reflexes in this arm were normal. She returned to the hospital at intervals for examination and when last seen, November 14, there was no motor deficit demonstrable. The reflexes in the left leg were exaggerated and the Babinski response was still present. The blood count at this time was normal except for an eosinophilia of 14 per cent.

The diagnosis in this case was established with considerable difficulty. Trichiniasis was suggested by the history of swollen eyelids and "bloodshot" eyes. Against this diagnosis at the time of admission, however, was the absence of muscle pains and the normal differential count of the blood, and the patient's mental condition was such that she did not remember having eaten any pork. The various diagnoses considered were poliomyelitis and encephalomyelitis. Acute anterior poliomyelitis was considered chiefly because the patient was admitted during a mild epidemic and because of the flaccid paralysis of the left shoulder girdle. This diagnosis was not thought tenable, however, because of the preponderance of cerebral symptoms and because of the normal cerebrospinal fluid. Acute encephalomyelitis, possibly in the nature of an acute multiple sclerosis, was thought to be the best diagnosis. In favor of it was the presence of signs indicating bilateral upper motor neuron and also lower motor neuron involvement. The occurrence of the edema of the eye and the conjunctival hemorrhages could not be explained on the basis of this diagnosis, however, and our attention was redirected to trichiniasis by the very high eosinophil count in subsequent blood smears. This diagnosis was confirmed by skin tests, by biopsy of the muscles and by the history of pork ingestion. When the patient became mentally clear she remembered that on July 4 she and three friends had eaten pork patties at a local restaurant. The three friends were called in for examination. One of them had noticed on September 3 a slight swelling of his face, general malaise and stiffness of the neck. These symptoms lasted for two days. When examined September 12 the only positive finding was an eosinophilia of 40 per cent in the blood. The remaining two friends who had eaten the pork experienced no symptoms and showed no abnormality on examination September 13 except that their blood showed an eosinophilia of 8 per cent and 9 per cent respectively.

CASE 2.—*Girl, aged 13 years, with extreme muscular weakness and absent tendon reflexes; recovered.*

History.—S. K., a Negro girl, aged 13 years, was admitted to the First Medical Service of the Boston City Hospital June 17, 1934, and transferred to the neurologic unit June 19. Nine days before admission she noted a burning sensation in the eyes, which continued for three days. Six days before admission there was an attack in which everything went black before her eyes for about five minutes but there was no loss of consciousness. She was put to bed at once and on the following day she had pains in the thighs and arms. She was also nauseated and vomited a few times. Four days before admission a progressive weakness of the back muscles began to develop so that she was unable to sit up and there was also weakness of the legs and of the arms. Her voice became weak. Slight edema of the eyelids was noted twenty-four hours before admission, at which time her temperature was 101 F.

Examination.—The patient was well developed and well nourished and was acutely ill. The examination of the head, neck, chest and abdomen was negative. The patient could raise her head from the pillow only slightly and she was unable to sit up. There was no stiffness of the neck or Kernig's sign. Blood pressure was 114 systolic, 80 diastolic. The cranial nerves were normal. She was able to move her arms and legs. There was considerable weakness of the thigh muscles and shoulder muscles. The extensors of the arm were weaker than the flexors, and the quadriceps were the weakest of the thigh muscles. The deltoid triceps and extensor of the fingers on the left were weaker than on the right. All the tendon reflexes were absent in the arms and legs. Cutaneous and deep sensation was normal. The abdominal reflexes were absent. The plantar reflex was normal. No muscle or nerve tenderness was elicited.

Laboratory Data.—The urine was normal. The blood Kahn reaction was negative. The blood count, June 18, showed a mild degree of secondary anemia and a leukocyte count of 10,600. No eosinophils were seen on the stained smears. June 20 the leukocyte count was 13,300 and the differential count showed 1 per cent eosinophils. June 21 the leukocyte count was 9,750 and the smear contained 25 per cent eosinophils. Smears stained at intervals between June 21 and the date of discharge, July 10, all showed eosinophils varying between 9 and 28 per cent. The chemical analysis of the blood showed 30 mg. of nonprotein nitrogen and 82 mg. of sugar per hundred cubic centimeters. The blood culture was sterile and the agglutination tests for typhoid, paratyphoid and Brucella abortus were negative. Electrocardiograms taken June 27, 30 and July 3 were negative. Lumbar punctures were performed June 18 and 20. The fluids were clear and colorless and under a normal pressure. The cell count was normal (1 and 3 cells per cubic millimeter). The globulin tests were negative, and the protein content was normal. The colloidal gold and Wassermann reactions were negative. A skin test for trichiniasis was positive June 22, and biopsy of the deltoid muscle June 24 showed trichinae.

Course.—There was a gradual improvement of the strength of the muscles so that by July 12 the patient was able to walk without difficulty. The ankle jerks could be obtained July 2 (fifteen days after entry), and the knee jerks were present on discharge. The blood showed an eosinophilia of 28 per cent at the time of discharge.

Trichiniasis was not considered at the onset of this case because of the absence of eosinophilia in the blood and because of the absence of the history of pork

ingestion. The diagnoses considered at this time were acute anterior poliomyelitis and polyneuritis. The widespread muscular weakness without any actual paralysis was against the diagnosis of acute anterior poliomyelitis, as was also the normal cerebrospinal fluid. The severity of the weakness of the trunk muscles, the absence of sensory loss and nerve tenderness were against the diagnosis of polyneuritis. The development of the marked degree of eosinophilia was the factor that directed our attention to trichiniasis. This diagnosis was confirmed by the skin test and by the finding of organisms in the muscles, although no history of pork ingestion could be obtained.

CLINICAL SYNDROMES

The involvement of the nervous system in trichiniasis may simulate polyneuritis, acute anterior poliomyelitis, encephalomyelitis and rarely meningitis. Cases presenting weakness of the muscles of the trunk and extremities with absent reflexes are the most common. The evidences in such cases vary from a complete paralysis with absent reflexes to an absence of reflexes without absent reflexes. Stiffness of the neck was found in one of these eleven patients and in eight additional patients. Kernig's sign was present in two cases.

Cases presenting mental symptoms and focal neurologic signs have been reported by Salan and Schwartz,[9] Horlick and Bicknell,[10] Meyer,[11] Walker,[12] Gordon,[13] Bloch and Hassin,[14] Hassin and Diamond,[15] Pund and Mosteller,[16] Chasanow,[1] Sterling[17] and Spink.[18] A summary of the clinical record of the fifteen cases presenting mental symptoms or focal signs is given in the accompanying table.

The occurrence of optic neuritis or cranial nerve paralysis has been noted by Chasanow,[1] Salan and Schwartz,[9] Spink,[18] Parker,[19] Thompson,[20] Stoll[21] and Bosch.[22]

PATHOLOGY

Nine cases in which the nervous system was studied at necropsy are recorded in the literature. In the cases reported by Walker,[12] Gordon,[13] Knorr[23] and Bloch and Hassin,[14] nonspecific changes were found; i. e., edema, congestion, mild infiltration and moderate nerve cell changes. Frothingham,[24] Gruber and Gamper,[25] Pund and Mosteller[16] and Hassin and Diamond[15] have reported cases in which they found nodules composed of glial, endothelial and hematogenous cells, and a trichina embryo. In the case reported by Gruber and Gamper,[25] in addition to the inflammatory nodules there were embolic lesions from a trichinous endocarditis.

Summary of Cases of Trichiniasis Presenting Involvement of the Central Nervous System

Author	Age	Sex	Headache	Stiff Neck	Delirium and Other Conditions	Focal Signs	Reflexes: Knee Jerks	Reflexes: Ankle Jerks	Cerebrospinal Fluid	Outcome
Salan and Schwartz	16	♀	0	+	0	Mild right hemiplegia, left VI nerve	++	++	....	Recovered
Horlick and Bicknell	52	♀	0	0	+	Left hemiplegia	++	++	....	Died
Meyer	6	♀	+	+	+	0	0	0	56 lymphs	Improved
Walker	19	♂	+	+	+	Paraplegia	0	0	....	Died
Gordon	14	♀	0	+	+	Left ptosis	N	N	30 cells	Died
Bloch and Hassin	23	♂	+	0	+	Left jacksonian convulsions, left hemiplegia	++	++	....	Died
Hassin and Diamond	14	♂	+	..	+	....	....	....	....	Died
Pund and Mosteller	11	♂	0	0	+	Paraplegia	0	0	35 cells	Died
Chasanow	28	♀	+	+	+	Right VI and VII, left VI, "polyneuritis"	0	0	35 cells	Improved
Sterling I	21	♀	+	—	+	Right hemiplegia aphasia	++	++	....	Improved
Sterling II	56	♂	..	..	+	Left hemiplegia	++	++	....	Improved
Spink	47	♀	—	0	0	Right hemiplegia, left VII	0	0	Normal	Improved
Case 1	17	♀	+	+	+	Left hemiplegia, left brachial palsy	++	++	Normal	Recovered

muscular weakness. The degree of muscular weakness in our second case and in that reported by Chasanow[1] was so severe that the diagnosis of polyneuritis was seriously considered. Nonne and Höpfner[2] were the first to call attention to the fact that the deep reflexes may be absent in the course of trichiniasis. In six of twenty-seven cases they found bilateral absence and in five unilateral absence; since their report cases presenting absent reflexes have been recorded by Staubli,[3] Gaisböck,[4] Salzer,[5] Eisenhardt,[6] Schönborn,[7] Fuchs[8] and others. In an effort to determine the frequency of loss of reflexes in trichiniasis, we have reviewed the records of 110 cases that have been admitted to the Boston City Hospital in the past twenty years. The knee jerks were absent in eleven of the 110 cases, or 10 per cent. Several authors have emphasized the coincidence of stiffness of the neck, Kernig's sign and

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3. Staubli, C.: Klinische und experimentelle Untersuchungen über Trichinosis und über die Eosinophilie im Allgemeinen, Deutsches Arch. f. klin. Med. **85**, 1905.
4. Gaisböck, F.: Beobachtungen über Trichinose, Wien. klin. Wchnschr. **22**: 410, 1909.
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6. Eisenhardt, W.: Bericht über eine kleine Trichinosepidemie, München. med. Wchnschr. **65**: 1406, 1918.
7. Schönborn, S.: Zur Diagnostik und Therapie der Trichinose, Deutsche med. Wchnschr. **44**: 286, 1918.
8. Fuchs, B.: Ueber eine Trichinenepidemie in Erlangen, München. med. Wchnschr. **69**: 1336 (Sept. 15) 1922.
9. Salan, Joseph, and Schwartz, Benjamin: Trichinosis with Involvement of Central Nervous System, J. A. M. A. **90**: 611 (Feb. 25) 1928.
10. Horlick, S. S., and Bicknell, R. E.: Trichinosis with Widespread Infestation of Many Tissues, New England J. Med. **202**: 816 (Oct. 24) 1929.
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13. Gordon, M. B.; Cares, R., and Kaufman, R.: Encephalitis and Myocarditis in a Fatal Case of Trichinosis, J. Pediat. **6**: 667 (May) 1935.
14. Bloch, Leon, and Hassin, G. B.: Trichinosis Complicated by Encephalitis, M. Rec. **91**: 537 (March 31) 1917.
15. Hassin, G. B., and Diamond, I. B.: Trichinosis Encephalitis, Arch. Neurol. & Psychiat. **15**: 34 (Jan.) 1926.
16. Pund, E. R., and Mosteller, Ralph: Trichinosis: Demonstration of the Parasites in the Brain, J. A. M. A. **102**: 1220 (April 14) 1934.
17. Sterling, W.: Nervous Disturbances in Trichinosis, Rev. neurol. **1**: 435 (April) 1925.
18. Spink, W. W.: Cardiovascular Complications of Trichinosis, Arch. Int. Med. **56**: 238 (Aug.) 1935.
19. Parker, F. J.: The Eye Symptoms of Sporadic Trichinosis with Report of Cases, M. Rec. **72**: 179 (Aug. 3) 1907.
20. Thompson, W. G.: Trichinosis: A Clinical Study of Fifty-Two Sporadic Cases, Am. J. M. Sc. **148**: 157, 1910.
21. Stoll, H. F.: Trichinosis: Two Cases Presenting Diplopia and One, Polyserositis, J. A. M. A. **92**: 791 (March 9) 1929.
22. Bosch, H.: Taubheit bei Trichinose, München. med. Wchnschr. **78**: 436 (March 13) 1931.
23. Knorr, H.: Beitrag zur Kenntnis der Trichonellenkrankheit des Menschen, Deutsches Arch. f. klin. Med. **108**: 137, 1912.
24. Frothingham, C.: A Contribution to the Knowledge of the Lesions Caused by Trichina Spiralis in Man, J. M. Research **15**: 483, 1906.
25. Gruber, G. B., and Gamper, E.: Ueber Gehirnveränderungen bei menschlicher Trichinose, Verhandl. d. deutsch. path. Gesellsch. **23**: 219, 1927.

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Nonne and Höpfner [2] reported normal manifestations in the nerves and spinal cord of one patient in whom the reflexes were absent.

The pathologic mechanism of the production of neurologic symptoms in cases of trichiniasis are not all entirely clear. It can be readily understood how the inflammatory nodules in the brain and cord can produce symptoms, and it is also possible that small cerebral or meningeal vessels may be occluded by the organisms or by emboli from cardiac involvement and produce cranial nerve palsies and other focal signs. But the mechanism of the production of symptoms of generalized weakness and absent reflexes is not understood. It has been thought that these symptoms may be due to an involvement of the nerves by the trichinae or a toxin produced by them. This is supported by the finding of altered electrical reactions.[26] This theory has never been proved, however, since the only pathologic study [2] of the nerves was negative. It has been suggested that these symptoms may be due to the trichinous myositis. This is not a satisfactory explanation, however, since the reflexes are not lost so early in other forms of myositis.

CEREBROSPINAL FLUID

Trichinae have been found occasionally in the spinal fluid of patients with trichiniasis with or without nervous symptoms by Meyer,[11] Van Cott and Lintz,[27] Lintz,[28] Bloch,[29] Elliott,[30] Salzer [5] and Cummins and Carson.[31] In addition, lymphocytes have been found in the fluids in several cases: Stoll,[21] 90 and 92 per cubic millimeter; Pund and Mosteller,[16] 35 per cubic millimeter; Chasanow,[1] 11 per cubic millimeter; Meyer,[11] 50, 58 and 240 per cubic millimeter, and Gordon,[13] 30 per cubic millimeter.

We have examined the fluids from eleven patients with trichiniasis and the results were entirely within normal limits with regard to the pressure, cell counts, protein content, colloidal gold and Wassermann reaction. No embryos were found. Negative results are also reported by McDonald and Waddell [32] (thirteen cases) and others. It is perhaps worthy of note that the reports of the finding of trichinae in the fluids are chiefly in the older literature. In recent years, more reliance has been placed on the skin test and biopsy of the muscles, and the fluids are therefore probably not searched as carefully for organisms.

DIFFERENTIAL DIAGNOSIS

Cases of trichiniasis presenting neurologic complications must be differentiated from (1) polyneuritis, (2) poliomyelitis, (3) encephalitis or encephalomyelitis, (4) meningitis, (5) dermatomyositis and (6) periarteritis nodosa.

The diagnosis of trichiniasis can usually be established by the history of pork ingestion, by an eosinophilia in the blood (which may not develop until late, however), by the skin test and by biopsy of muscles. The cerebrospinal fluid is usually normal and helps to exclude poliomyelitis, encephalitis and meningitis.

Since skin lesions may be present in trichiniasis, the cases presenting muscular weakness may be confused with dermatomyositis. It is differentiated, however, by the absence of widespread subcutaneous edema together with the history of pork ingestion, skin tests and biopsy.

Patients with periarteritis nodosa may have a polyneuritis with muscular weakness, absent reflexes and an eosinophilia in the blood.[33] The differential diagnosis in these cases depends on palpation of the arterial nodules or biopsy of them.

PROGNOSIS

The prognosis of the cases presenting only muscular weakness or absent reflexes is very good. The patients practically always recover with slight or no residual manifestations. The outlook is much more serious in the cases presenting mental symptoms or signs of focal lesions in the central nervous system, death occurring in six of the thirteen reported cases (46 per cent).

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EYE CHANGES IN HYPERTENSIVE TOXEMIA OF PREGNANCY

A STUDY OF THREE HUNDRED CASES

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During the past three years I have made rounds in the Negro obstetric ward of Grady Hospital twice weekly and made records of the fundus oculi of all patients whose systolic blood pressure exceeded 140 or whose diastolic blood pressure exceeded 90. This study was undertaken with the hope of possibly correlating the retinal picture with the degree of clinical toxemia.

The first change to be observed in mild toxemia is usually a generalized narrowing of the lumen of the arterioles, which may be limited to a single arteriole or one of its branches. Almost as frequently, however, the first change is a localized narrowing appearing as a single spasm or as a series of spasms, usually in the first half of the retinal artery. The fact that there is usually no associated exaggeration of arterial reflex and no arteriovenous compression suggests that the lesion is spastic and not sclerotic. If the location and degree of the constrictions vary at subsequent examinations, it is proof of their spastic nature.

The degree of arterial lesions, especially the generalized constriction, follows closely the degree of clinical toxemia. In the more marked toxemias there is a combination of spasms and generalized constriction. Retinal edema usually first becomes visible near the upper and lower margins of the disk and radiates along the course of the retinal vessels. Retinitis, as shown by hemorrhages and exudates, is most often seen in the posterior third of the retina.

The arterioles may regain their normal caliber if there is a reduction of the blood pressure to normal sufficiently early. Wagener [1] states that if the lesions exist as long as ten days they have probably become sclerotic, although they were originally angiospastic. Mylius (according to Bergmann [2]), who made histologic examinations of the eyes of women who died in eclampsia, concluded that spastic changes in the retinal

vessels might exist for many weeks without producing organic changes. Bergmann stressed that the degree of spasticity might vary in direct ratio with variations in the blood pressure.

Silex [3] as early as 1895 stated that in cases of retinitis with definite vessel changes the prognosis was worse. Mylius (quoted by Freeman [4]) in 1928 described spastic changes in the arterioles that he proved conclusively by fundus photographs. He showed that the changes in the arterioles preceded the retinitis and were the local cause of retinitis.

Wagener [5] in 1933 reported the study of a series of forty cases of hypertensive toxemia of pregnancy and concluded that spastic lesions of the arterioles were the most frequent and usually the primary sign of retinal involvement. They occurred in about 70 per cent of his cases; about 60 per cent of the spastic lesions disappeared with the termination of pregnancy and the return of the blood pressure to normal. In about 40 per cent of the cases organic lesions developed in the arterioles, often with retinitis, and in such cases elevation of the blood pressure usually persisted. He considered diffuse retinitis of the albuminuric type as evidence of severe generalized arteriosclerosis rather than of nephritis. In a later paper he [6] stated his belief that the majority of these patients with retinitis would have persistent hypertension, since he showed by biopsy and at necropsy that the arterioles through the body were permanently damaged. It was logical for him to conclude that the development of retinitis in any case of toxemia of pregnancy was a serious menace to the future integrity of the vascular system of the mother and an urgent indication to terminate pregnancy. The series that I am reporting substantiates his conclusions.

Wagener, Schiotz and Masters have noted that when retinitis developed before the twenty-eighth week there was only about a 25 per cent chance of the patient giving birth to a living baby, even if pregnancy was continued to the stage of viability, and there was almost 100 per cent risk of permanent cardiovascular-renal injury developing. I have seen five patients with retinitis before the twenty-eighth week; only one, or 20 per cent, gave birth to a living baby. Three of these patients had exhibited hypertensive toxemia previously.

However, if the toxemia that precedes the twenty-eighth week is not accompanied by retinitis, the chance for a live baby is not much better. I have seen twenty-one patients, all of whom had moderate to severe hypertension and arterial changes without retinitis; of these only six, or 29 per cent, gave birth to living babies. In eighteen labor was induced artificially; if the pregnancies had been allowed to continue to the period of viability, the mortality rate would undoubtedly have been higher. In thirteen of these cases there had been previous pregnancies with hypertensive toxemia, with eclampsia in two cases. The average age was 30 years, and the parity varied from one to twelve.

In fifty-three cases of this series there was a record of a previous hypertensive toxemia of pregnancy. It is interesting to study the effect of the previous toxemia on a subsequent pregnancy. The average age in this group was 30.2 years. In 77.4 per cent there were vascular changes and in 9.4 per cent retinitis. In seven, or 13.2 per cent, the fundus oculi was normal. Forty, or 75.5 per cent, of the babies were born alive. One hundred consecutive patients without previous hypertension or hypertensive toxemia of pregnancy were studied for comparison. Their average age was 24.2 years, and 91 per cent of the babies were born alive. Seventy-eight per cent showed arterial changes, and 12 per cent retinitis. Seventeen per cent had normal fundi. Wagener expressed the opinion that the presence of previously established organic changes in the retinal arterioles was not of itself a contraindication to a future pregnancy; in fact, his group of patients with previous hypertension showed fewer angiospastic changes than did another group of patients without previous hypertension, and the control group showed a higher incidence of retinitis. In my series if the cases with arterial changes together with retinal edema were classed as retinitis, the group with previous hypertensive toxemia of pregnancy would show a higher percentage of retinitis than would the group without previous hypertensive toxemia of pregnancy. Also, since nephritis and severe grades of hypertension are more frequent in those patients who have had a previous toxemia, I would conclude that one hypertensive toxemia of pregnancy contraindicates another pregnancy because the patient is more likely to suffer permanent cardiovascular-renal damage.

Urinalysis had been done on 280 of these patients and the general trend of the albuminuria fairly closely followed the severity of the hypertension and the occurrence of retinitis. But the absence of albuminuria agrees with Curtis,[7] who said that a rise in blood pressure might occur and persist throughout pregnancy without apparent evidence of renal disease. Forty-one per cent of the patients showed no albuminuria; even in class 3 (severe) hypertension there was no albuminuria in 32 per cent, and only a trace in 14 per cent. However, as the albuminuria increased from 1 plus to 4 plus there was proportionate increase in the frequency of fundus changes, especially retinitis, and also a proportionate increase in the frequency of eclampsia and class 3 hypertension. It seems then that the absence of albuminuria in these patients is without great significance, but a high grade of albuminuria indicates a severe grade of toxemia. This is likewise true of the presence of casts in the urine.

The phenolsulfonphthalein urinary and the nonprotein nitrogen, creatinine and sugar content of the blood did not show changes in keeping with the degree of clinical toxemia.

Excessive gain in weight was exhibited by forty patients, that is, 10 pounds or more within a month, and in all cases this gain occurred during the last trimester. The fact that the average was 23.3 years, that only seven, or 17.5 per cent, had been pregnant more than five times (50 per cent were primiparas) and that thirty-nine, or 97.5 per cent, of the babies were born alive indicates that this unusual weight gain is not usually associated with an extremely severe toxemia. Only three, or 7.5 per cent, showed retinitis.

When the patients are classified (table 1) according to the severity of the hypertension, one sees the most striking increase in the frequency of eye changes on passing from class 1 to class 2 hypertension. Eye changes occur in 40.8 per cent of class 1, in 84.5 per cent of class 2 and in 98 per cent of class 3. Class 1 included those patients whose blood pressure did not

3. Silex, quoted by Wagener.[5]

4. Mylius, K., quoted by Freeman, David: Retinal Angiospasm, Baltimore City Medical Society, Section of Ophth., Dec. 7, 1932, Am. J. Ophth. 16: 341 (April) 1933.

5. Wagener, H. P.: Arterioles in Toxemia of Pregnancy, J. A. M. A. 101: 1380 (Oct. 28) 1933.

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7. Curtis, A. H.: Obstetrics and Gynecology, Philadelphia, W. B. Saunders Company 1: 1037, 1933.

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exceed 150/100 before delivery; likewise, class 2 included those patients whose blood pressure ranged from 150/100 to 175/125, and class 3 included those whose blood pressure exceeded 175/125. The blood pressure range was determined by the variations over a period of several days or weeks. Thus it was seen that 53.3 per cent of the retinitis fell into class 3 and only 3.3 per cent fell into class 1; and 32.7 per cent of the patients in class 3 showed retinitis, whereas only 3.7 per cent of those in class 1 showed retinitis. Likewise fifteen cases, or 78.9 per cent, of the eclampsias occurred in class 2, and the remaining four, or 21.1 per cent, occurred in class 3.

When the patients were studied grouped according to the type of toxemia it was found that there was some ocular fundus change in 62.1 per cent (retinitis in 9.5 per cent) of the preeclamptic patients, in 84.0 per cent (retinitis in 11.6 per cent) of the nephritic patients and in 95.2 per cent (retinitis in 45.0 per cent) of the eclamptic patients. Thus it is quite certain that permanent damage is done to the mother's vascular-renal system by all three types of toxemia.

In this series of 300 patients 76.3 per cent showed abnormalities of the fundus oculi (table 2). The changes were classed as only arterial in 62.5 per cent and as retinitis in 13.2 per cent. The average age of the 300 patients was 25.3 years, whereas those who showed pathologic conditions averaged 26.2 years and those without such conditions averaged 21.8 years. The age increased from 23 years average in class 1 to 30.2 years in class 3. The twenty-one eclamptic women averaged 21 years of age; fifteen were primiparas and averaged 18.5 years of age, while the six multiparas with eclampsia averaged 27.5 years of age. Labor was induced on 108 patients; on thirty, or 60 per cent, of the patients with class 3 hypertension, and on fourteen, or 66.7 per cent, of the patients with eclampsia.

The maternal mortality in this series of 300 patients was two, or 0.07 per cent. Both patients were primiparas and both were eclamptic. Their ages were 38 and 18 and there was no history of previous hypertension. In these cases labor was induced during the eighth and seventh months of pregnancy. The older patient gave birth to a living baby, and the younger patient died before the baby was delivered. The older patient showed rather marked arterial changes and diffuse retinitis before death, but the younger patient was last seen eight days before the onset of convulsions and ten days before death, and at that time she showed marked constriction of the entire tree of the retinal artery, and variations in caliber of almost every arterial branch.

TABLE 1.—*Classification of Antepartum Blood Pressure in 271 Cases According to Severity*

	1		2		3	
	Number (66)	Per Cent (24.5)	Number (155)	Per Cent (57.0)	Number (50)	Per Cent (18.5)
Any eye change	27	40.9	131	84.5	49	98.0
Arterial only	21	77.7	89	61.1	26	53.0
Arterial and edema	3	11.1	38	27.5	7	14.3
Retinitis	1	3.7	13	9.9	16	32.7
Edema only	2	7.4	2	1.5		
Arterial only	21	16.7	80	63.5	26	20.6
Arterial and edema	3	6.6	36	79.0	7	15.4
Retinitis	1	3.3	13	41.3	16	53.3
Edema only	2	50.0	2	50.0		
Preeclampsia	41	39.8	55	53.4	7	6.8
Eclampsia			15	78.9	4	21.1
Nephritis	25	16.8	85	57.0	39	26.2

Retinal detachment is an infrequent complication in toxemias of pregnancy. In six cases, or 2 per cent, of this series bilateral detachment developed before delivery. All patients showed retinal arterial changes and diffuse retinitis, indicating that the type of toxemia was severe in each case. Vision was markedly impaired in each instance, but all improved rapidly as the retinas were completely reattached within ten days after delivery of the baby. The average age of the mothers was 21 years; five were primiparas, and the other two were secundiparas. Only three gave birth to living babies. Three were classed as eclamptic. Two had class 2 hypertension and four had class 3 hypertension, all of which indicated that a severe toxemia was present in each.

TABLE 2.—*Hypertensive Toxemia of Pregnancy in 300 Cases*

	(300)		Average Age (25.3)	Labor Induced (108)	
	Number	Per Cent		Number	Per Cent
Any eye change	229	76.3	28.2*	91	84.3
Arterial only	143	62.5	27.1	57	62.6
Arterial and edema	50	21.9	23.9	15	16.5
Retinitis	32	13.9	28.5	19	19.8
Edema only	4	1.8	20.7	1	1.1
Class 1	66	24.5	23.0	10	15.2
Class 2	155	57.0	24.9	57	36.7
Class 3	50	18.5	30.2	30	60.0
Preeclampsia	116	38.7	21.5	21	18.7
Eclampsia	21	7.0	21.0	14	66.7
Nephritis	163	54.3	29.0	62	39.3

* Without eye changes, 21.8.

CONCLUSIONS

1. The ophthalmoscope, I think, should be rated next to the sphygmomanometer as an instrument of diagnostic importance in the management of a case of hypertensive toxemia of pregnancy.

2. Generalized narrowing and localized spastic constriction of the retinal arterioles are the earliest changes in the fundus oculi; retinal edema, hemorrhages and exudates appear later if the toxemia progresses in severity.

3. When hypertension develops or increases during pregnancy, careful watch should be kept for angiospastic lesions of the retinal arterioles. Pregnancy should be terminated if the progress of these lesions cannot be controlled by conservative measures, and certainly before the onset of retinitis.

4. The arterioles may regain their normal caliber if there is a sufficiently early reduction of the blood pressure to normal.

5. The frequency and degree of lesions of the fundus oculi closely follow the severity of the hypertension.

6. If retinitis occurs before the twenty-eighth week of pregnancy there is only about a 25 per cent chance of the patient giving birth to a living baby, even if pregnancy is continued to the stage of viability, and there is almost 100 per cent chance of permanent vascular-renal injury developing. If toxemia precedes the twenty-eighth week of pregnancy and is not accompanied by retinitis, the prognosis is slightly better.

7. A previous hypertensive toxemia of pregnancy contraindicates a future pregnancy; the chance of the patient developing eclampsia is less, but the prospect of a live baby is not as good, and the chance of developing permanent vascular-renal injury is greater.

8. Retinal detachment occurs in about 2 per cent of hypertensive toxemias of pregnancy. The detachments usually become reattached within ten days after termination of the pregnancy.

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TRICHLOROETHYLENE INTOXICATION

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Since 1915, when Oppenheim recommended trichloroethylene as a therapeutic agent, numerous investigators have published contradictory opinions regarding the efficacy of the drug to relieve the pain of trigeminal neuralgia. Reports of beneficial results following the use of the drug range from 85 per cent complete relief, as reported by Plessner,[1] to only 5 per cent complete relief, as reported by Seelert[2] in a later paper. More recently the drug has been used with some success as a hypalgesic in the treatment of angina pectoris.[3] The further clinical applicability of the drug has been investigated by Striker and his associates,[4] who have successfully employed it to induce general anesthesia during surgical operations. The clinical observations of these investigators, together with the published results of laboratory studies of the effect of the purified drug on laboratory animals, have led to the general feeling that the relatively pure drug is without harmful effects unless massive overdoses are administered.[5] After observing more than 300 cases of anesthesia produced by trichloroethylene, Striker and his associates concluded that "pure trichloroethylene has no harmful effects when properly inhaled in such quantities as are required to produce analgesia and anesthesia." Herzberg[6] reported that the liver, spleen, kidneys, diaphragm, pancreas, heart muscle, lungs, adrenals and pectoral muscles taken from three dogs that were killed by an overdosage of trichloroethylene after being deeply anesthetized with the drug for periods ranging from two and one-half to three and one-half hours showed no gross or microscopic changes. Joachimoglu[7] obtained similar results, indicating that the drug does not cause demonstrable pathologic changes.

On the other hand, the industrial utilization of this chemical has resulted in numerous instances of poisoning, and the literature is replete with instances of such accidents. Alice Hamilton[8] has reviewed the cases of industrial poisoning due to trichloroethylene and mentions 284 cases with twenty-six deaths. As against this impressive toxicity exhibited by the drug in industry, there are few reported instances of toxic symptoms in which the drug has been used therapeutically. Some have expressed the opinion that this difference in the appearance of toxic symptoms has been caused by the presence of adventitious substances and decomposition products present in the relatively impure commercial products. On this point, Glaser[9] has expressed the opinion that "it certainly appears as if the present trichloroethylene is not the drug responsible for the toxic symptoms mentioned in Plessner's workers." Various other writers have ascribed this difference in action to the length of time during which the drug was inhaled or to the amount of it that was ingested.

Because of the paucity of observations following prolonged administration of large doses, further confusion exists concerning the clinical effects of trichloroethylene. The official comment in New and Nonofficial Remedies states that the actions of trichloroethylene have not been investigated comprehensively and that it was introduced in therapeutics following some observations on man. As a matter of fact, although there are more than 280 cases of industrial poisoning with trichloroethylene reported in the literature, there is only one reported case of severe intoxication following the accidental and improper use of therapeutic trichloroethylene.

The salient features that this lone case presented are as follows:[10]

A woman, aged 34, had a history of chronic addiction to morphine and ether and of a successful treatment of that condition. A dental neuralgia developed and her dentist prescribed trichloroethylene to allay the pain. After the need for the remedy had disappeared she continued to take the drug and finally increased the amount until she was taking 50 Gm. a day. The symptoms that developed resembled those of "narcotism" and included tremor, nausea, reduced will power and marked emotionalism with mild delirium. Recovery followed promptly after withdrawal of the offending drug.

During the past year two similar instances of the malign effects of prolonged trichloroethylene overdosage have been observed in the Johns Hopkins Hospital.

The first patient was admitted to the private wards. Since it was impossible for the patient to give any history at the time of his admission, the following data were obtained from his family:

CASE 1.—A retired business executive, aged 52, had led a very tense and active life. His habits, in general, were normal. Alcohol was used occasionally in moderation. Three years before the time of admission he began to have pain in the right side of the face. Initially it was thought that the pain was of dental origin and therefore two of his teeth were extracted, but the symptoms persisted. After a time the character of the pain indicated its nature and a diagnosis of trigeminal neuralgia was made. There were periods of several consecutive months during which there was no discomfort, but in spite of various treatments it recurred invariably. Two years before he came to the hospital he began to use a proprietary preparation of trichloroethylene prescribed by his physician. He gradually increased the dose inhaled. About ten days before admission pains developed in the shoulders, elbows, legs and knee which were attributed to a "grippal attack," although the usual symptoms of such an infection were lacking. He increased the dosage of trichloroethylene until he began to be drowsy and listless. It is known that he continued to take the drug until he was admitted, although no accurate information was available concerning the amount consumed; it was said that he used a full bottle (about 4 ounces, or 120 cc.) during the two days before he was admitted to the ward. During this period he developed a "thickness of speech," difficulty in concentrating and a marked tendency to "grope for words." He became very unsteady while standing, and his wife stated that he appeared as though he were drunk. The mental disturbances became progressively more marked.

On admission to the hospital the first impression of the house staff was that the patient was in a catatonic stupor. He could hardly stand without assistance, appeared very drowsy and manifested a tendency to lapse into sleep if left alone, and his movements were sluggish and inaccurate. There were evidences of moderate loss of weight, but no other physical abnormalities were noted. Since the patient was unable to cooperate the neurologic examination was of necessity incomplete, but objectively there were no neurologic changes. A psychiatric consultation was requested and it was the opinion of the psychiatrist that a concentration difficulty was the essential feature. The patient was disoriented for time and place and very confused. There was a moderate degree of asphasia and dysarthria.

From the Johns Hopkins Hospital.

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Diagnostic possibilities suggested by this clinical picture included epidemic encephalitis and bromide intoxication. A lumbar puncture yielded spinal fluid which was determined to be normal, and examination of the urine failed to disclose the presence of bromides. The administration of trichloroethylene was discontinued immediately and the patient improved rapidly. Within three days his mental clarity was restored almost completely. At this time he complained of numbness of the face, but there was no anesthesia of the area innervated by the trigeminal nerves. Coincident with the return of normal mental reactions the patient complained of slight pain in the right side of the face, but this symptom was readily relieved by small and infrequent doses of acetylsalicylic acid. His convalescence was rapid and uninterrupted. No specific therapy was employed. At the end of two weeks his mental acuity had returned completely and no psychologic defects were noted. There was some residual nervousness and weakness and a moderate degree of inanition, which disappeared after several weeks of rest and roborant measures. A communication from the patient, eight months after he had left Baltimore, indicated that there were no aftermaths of his illness.

CASE 2.—A woman, aged 52, came to the outpatient department because of pain in the right lower part of the jaw and tongue. Trichloroethylene was prescribed, but as this failed to relieve the pain a partial section of the fifth nerve root at the level of the pons was performed. The operation did not have the desired result, for the pain persisted. Pending the day on which a second operation was to be done, trichloroethylene was prescribed again in doses of 20 drops three times a day. The details of the immediate sequence of events were never revealed, but it is known that the patient succeeded in obtaining a large quantity through the wholesaler and that she took increasing amounts of it on a handkerchief and inhaled it repeatedly. Over a period of several days she is said to have used about 6 ounces (180 cc.). A fulminating psychosis developed with acute hallucinations and a striking change of personality. The patient had been a composed and temperate individual; on this occasion she is said to have come downstairs to dinner, seated herself at the table and commenced to devour a ham. Attempts by the family to control the bulimia were thwarted by the patient's strange behavior. At their approach she would desist from her depredations, scowl at her kinsmen and reply to their remonstrations by growling and making queer noises. So successful were her intimidating gestures that she was able to hold them at bay until she had gormandized the whole ham. Then she half-walked, half-crawled up the stairs and, having reached the top, attempted to stand up but fell backward and down the stairs and fractured one of the lumbar vertebrae. She was brought to the hospital, where a suitable cast was applied. The bizarre symptoms that she had manifested prior to her admission disappeared rapidly after the administration of the trichloroethylene was stopped. At no time during this period of observation did she complain of pain in her face, and subsequent reports, received several months later, indicated that the pain had not recurred, nor were there any residual effects noted which might have been in any way attributable to the overdosage of trichloroethylene.

Most of the symptoms noted have been observed also following the industrial use of trichloroethylene. In addition, trichloroethylene as used industrially is capable of provoking symptoms that have not been observed following the use of therapeutic trichloroethylene. For purposes of comparison, certain outstanding effects ascribed to the use of industrial trichloroethylene are listed below.[8] Particular attention is called to the fact that none of the symptoms listed here have ever been observed following the use of therapeutic trichloroethylene.

The effects are:

Cerebral manifestations pointing to lesions in the capillary walls.
Epileptoid seizures.
Corneal anesthesia and painless keratitis.
Swelling of the optic disks.
Optic neuritis.
Optic atrophy with blindness.
Anesthesia in the area innervated by the trigeminal nerve.
Paralysis of the fifth nerve persistent after seven months.
Trophic changes leading to the loss of teeth.
Persistent auditory dysfunction.
Progressive loss of speech.

Many writers have noted a difference in the general effects of the chemical depending on whether it was absorbed accidentally in industry or as a result of therapeutic administration. The difference in effect has been variously attributed to (1) the presence of adventitious substances in the industrial trichloroethylene, (2) the length of time of administration, (3) the amount inhaled or (4) a combination of these several factors. Striker expresses the opinion that the pathologic manifestations noted in industrial cases were due to contaminations in the trichloroethylene or more likely to some other causes. Prior to the observations reported in this article, there were no reported cases to indicate what the effects of large amounts of therapeutic trichloroethylene inhaled over relatively long periods of time might be. The failure of these cases of intoxication following large and prolonged dosage of the chemical to evince any of the graver symptoms attributed to industrial trichloroethylene poisoning tends to emphasize the suggestion made by the earlier investigators; i.e., that the toxic effects noted among the industrial workers may have been attributable, in some measure at least, to adventitious substances or decomposition products of trichloroethylene. On this point a significant inference may be drawn from the fact that, although there followed grave sequelae in the industrial cases, the symptoms that occurred in the clinical intoxications were ephemeral and disappeared promptly after withdrawal of the drug. Striker emphasized this opinion when he concluded that after general anesthesia with trichloroethylene there is a notable absence of postoperative nausea, vomiting, depression and the like. Perhaps one of the most significant observations in establishing the difference between the effects of therapeutic and uncontrolled industrial absorption of trichloroethylene is the fact that, although in industrial cases facial anesthesia and abolition of the corneal reflex were not infrequent, these effects were never observed in any patient who had received trichloroethylene therapeutically, unless a sufficient amount of the drug had been given to induce general anesthesia.

SUMMARY

1. Many cases of industrial poisoning with trichloroethylene have been reported, but there is only one recorded instance of a toxic syndrome following the prolonged therapeutic administration of the chemical. Two additional cases are presented here.

2. The symptoms observed in the latter group were due to a disturbance of the central nervous system as manifested by mental confusion, disorientation, inability to concentrate, amnesia, aphasia, dysarthria, ataxia and analgesia without anesthesia of the area innervated by the trigeminal nerve.

3. In view of these observations it seems likely that the original supposition is correct; namely, that the cases of industrial poisoning were due partly to adventitious substances and that all the manifestations noted in the industrial cases of so-called trichloroethylene poisoning were not necessarily effects of trichloroethylene per se.

4. Although proprietary preparations of trichloroethylene are thought to be relatively harmless remedies if used in prescribed amounts, the cases presented here indicate that this therapeutic agent is capable of producing grave states of intoxication if the suggested dosage is exceeded or if the administration of the drug is unduly prolonged.

EFFECT OF INJECTION OF BACTERIAL FILTRATE ON BROWN-PEARCE RABBIT EPITHELIOMA

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The employment of bacteria or their products in the treatment of malignant disease is not new. One need only refer to the work of Coley,[1] who for some forty-five years has reported favorably on the use of bacterial preparations in certain neoplasms. More recently Beebe and Tracy [2] were able to observe regression and disappearance of transplanted tumors in dogs that had been given injections of bacterial filtrates. Complete destruction of a transplantable mouse tumor was produced by Shear [3] in a high percentage of cases with filtrates of Bacillus coli. It is not my purpose here to review the rather extensive literature that has accrued on this general subject. However, reference must be made to the recent publication of Connell,[4] since it instigated the present study. Connell reported that symptoms of some patients suffering with carcinoma could be ameliorated by the administration of certain bacterial filtrates containing enzymes, which he calls "Ensols." These Ensols Connell prepared by inoculating with B. histolyticus a tube containing cancer tissue immersed in physiologic solution of sodium chloride. The cultures were incubated anaerobically at 37.5 C. for from four to six days, during which time the cancer tissue was digested presumably by ferments generated by the bacteria and specific for the type of cancer protein provided in the medium. The sterile filtrate obtained by passing the fluid through a Berkefeld candle was found to produce "much more rapid lysis of the cancer cells than took place in control tubes undergoing sterile autolysis." According to Connell's statements, clinical improvement of certain patients having carcinoma resulted from the injection of these Ensols. The growth of visible tumors was checked with softening and absorption. Patients having pain as a prominent symptom obtained relief with Ensol and were enabled to get along with a diminished dosage of sedatives. As far as is known to me, Gye [5] is the only one to have published subsequently experiments similar to those of Connell. He was unable to observe any effect of the injections of Ensol on the growth of mouse tumors.

Because of obvious restrictions incidental to the use of human material, the present study was undertaken on animals, in the hope thereby of gaining accurate experimental information on the mode of action and on the effects of similar bacterial filtrates. The Brown-Pearce rabbit epithelioma of the testicle would appear to be a particularly suitable test tumor and was used in these experiments. Its genealogy and biologic behavior are well known. It is a highly malignant animal tumor which, unchecked, runs a rapidly fatal course in a large proportion of cases.

METHOD

Inoculation of Animals.—Unless recorded to the contrary, the tumor tissue used for inoculation and for the preparation of the bacterial filtrate was obtained from nontreated and otherwise normal rabbits. This viable tumor tissue was removed either from the primary tumor growth or from a metastatic nodule. Tissue from one to four representative regions of the tumor mass was prepared for microscopic examination. Other tissue from the same region was minced with scissors until the individual particles were about the size of wheat grains. These were handled under aseptic precautions throughout and introduced with a trocar into the central portion of the testis, two or three such particles being inoculated into each rabbit. This is the standardized technic employed for more than three years in the division of radiology [6] and has been used in the inoculation of more than 1,000 rabbits. The rabbits in this series which had received such tumor inoculations were divided into two almost equal groups, one half receiving the bacterial filtrate, the other serving as controls.

Preparation of the Bacterial Filtrate.—The bacterial filtrate was prepared according to the directions of Connell for the production of Ensol. Masses of tumor tissue were removed aseptically from rabbits anesthetized with ether. As much as possible of the adjacent tissue, either from the site of the primary tumor or from a metastatic nodule, was carefully dissected away, so that the remaining tissue was quite homogeneous, thus fulfilling the supposed requirement that only one type of protein be present in the medium. This tumor tissue, which was of the same type as that used for inoculation of other rabbits, was then immersed in physiologic solution of sodium chloride, the proportion of tissue to the solution being approximately 1:10. After the mediums were inoculated with B. histolyticus [7] the culture was rendered anaerobic with a layer of sterile petrolatum and incubated at 37.5 C. for from five to eight days. During this time lysis of the tissue could be readily observed. Fibrous tissue and other undigested residue settled out. The supernatant fluid was passed through a Berkefeld candle, and the filtrate, after having passed the test of sterility in this final form, was now ready for injection. It will be noted that this filtrate was prepared without exception from the precise type of tumor tissue with which the rabbits were inoculated. Furthermore, rabbits 78 and 81 received injections of filtrate prepared from tumor tissue removed from their own bodies. A sizable colony of rabbits with tumor was available to supply tissue for fresh filtrate. At no time was the filtrate more than 16 days old when injected.

Injection of Filtrate and Further Care of Animals.—Preliminary injections of 0.2 cc. of the filtrate were

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6. The author is indebted to Dr. Stafford Warren and Mr. Otto Sabler, Division of Radiology, Department of Medicine, of the University of Rochester School of Medicine and Dentistry, for supplying the original stock tumor and for instruction in the method of making the inoculations.

7. American type culture collection No. 611.

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given under the skin of the ear to determine possible toxicity or other deleterious effect. It was soon learned that rabbits could tolerate with impunity dosages as large as 4 cc. given intravenously or subcutaneously. Larger doses were not given, and it is believed that no untoward effects have immediately followed any of the injections. The usual procedure was to inject the rabbits daily, the intravenous and subcutaneous routes being used on alternate days. The routine dosage was 0.6 cc. The rabbits were kept in individual cages and received a diet of oats, cabbage and alfalfa. Tap water was provided ad libitum. Aside from the matter of injections of the filtrate, the controls received the same night. However, in all cases autopsies were promptly performed. The tissues were preserved in Zenker's fixative and stained with the usual hematoxylin and eosin. We were thus enabled to accumulate a fairly complete series of slides of tissues coming from the control and the injected groups, as well as in cases in which biopsies were taken from the same animals before and after treatment.

EXPERIMENTAL STUDY

The almost invariable finding that variation is the rule in biologic response certainly must be regarded in the interpretation of phenomena pertaining to cancer

TABLE 1.—*Effect of Injections of Filtrate on Rabbits Previously Inoculated with Tumor Coming from Untreated Hosts* *

	Rabbit Supplying Tumor	Rabbit Receiving Tumor	Time After Tumor Inoculation when Injections Began, Days	Total Number of Injections	Longevity Following Inoculation with Tumor, Days	Comment
Experimental group A	899	74	17	41	88	Died from tumor metastases
	898, 74, 75 and 297	76	17	128	155, 113, 97 and 42	Living; (?) immune to tumor
	899	77	17	92	109	Killed—extremis
Control	899	73	..	....	64	Killed—extremis
	899	75	..	....	42	Killed—extremis
	899	78	77	8	85	Died from tumor metastases*
Experimental group B	898	79	14	80	94	Died from tumor metastases
	898	80	14	138	152	Living; tumor growth appeared arrested
	899	81	66	8	72	Died from tumor metastases*
Control	898, 74, 75 and 297	82	..	....	152	Living; (?) immune to tumor
Experimental group C	898	83	13	41	74	Died from tumor metastases
	898	84	13	31	44	Killed—extremis
	898	85	13	44	47	Killed—extremis
Control	898	86	..	....	88	Killed—extremis
	898	96	..	....	129	Living; tumor growth appeared arrested
	898	97	..	....	129	Living; tumor growing

* Recipients of the tumor had had no preliminary treatment. Injections were continued to date or until the animals died.

TABLE 2.—*Experiment 2* *

	Rabbit Supplying Tumor	Rabbit Receiving Tumor	Number of Prophylactic Injections	Total Number of Injections	Longevity Following Inoculation with Tumor, Days	Comment
Experimental group D	75	76	25	139	113	Living; (?) immune; no take
Control	75	82	..	....	113	Living; (?) immune; no take
Experimental group E	898	88	10	88	48	Died from tumor metastases
	898	89	10	141	131	Living; tumor growth static or regressive
	898	90	10	71	61	Killed-extremis
Control	898	87	..	....	131	Living; tumor growth static or regressive
	898	91	..	....	113	Died from tumor metastases
	898	92	..	....	75	Died from tumor metastases

* In these groups, tumor coming from untreated hosts was transferred to rabbits having had preliminary or prophylactic injections of the filtrate. Injections were then continued to date or until the animals died.

treatment as did the experimental animals. The animals were periodically weighed, the weights being considered an index of their general condition. At frequent intervals calipers were used to measure the rate of growth of the primary tumor, graphic records being kept. Note was also made of the appearance and growth of metastases. When in the course of events, both in the treated and in the untreated group, cachexia supervened as a result of the malignant growth and it appeared that the animal would in all probability die within a few hours, the animal would be killed, so that fresh tissue might be available for microscopic study. When this occurred, the term "killed—extremis" was applied in the accompanying tables. Even with this precaution, an animal would occasionally die during the growth and destruction. Innate resistance to cancer is probably not constant in different individuals or animals. Numerous factors doubtless determine whether or not a fragment of cancer tissue will take root and thrive within a new host. The behavior of a large number of transplants of cancer will have to be observed before an entirely satisfactory basal or standard response can be determined or anticipated. But even allowing for these variables I believe that the present series of experiments will permit of certain deductions. Only a portion of the observations lend themselves to statistical treatment. Primarily for convenience, however, pertinent data have been arranged in tabular form. As criteria for the determination of the effects of injection of the bacterial filtrate on the

growth of the Brown-Pearce rabbit epithelioma, the following were used:

1. The percentage of takes.
2. The rate of growth of the primary tumor.
3. The development of metastases.
4. The regression or disappearance of the tumor.
5. The longevity of the animal after inoculation with tumor.
6. The microscopic appearance of the tissue.

Table 1 summarizes the first experiment. Injections of filtrate were started on the seventeenth, fourteenth and thirteenth days following the inoculation of three groups of rabbits with the tumor fragments. Rabbit 76 appeared to be immune to this tumor, since four attempts at establishing the tumor transplants were unsuccessful. Rabbit 78 was originally selected as a control. However, when the tumor growth was 77 days old and metastases were noted in the pelvis, the primary tumor was removed and the rabbit then given injections. Eight injections of filtrate prepared from this rabbit's own tumor apparently did not materially alter the fatal course of the disease. In group B the tumor growth in rabbit 80 had become apparently static. The animal remained in good clinical condition after 138 injections of filtrate, even though metastatic nodules persist. The primary tumor has diminished somewhat in size but still persists. Rabbit 81, which as rabbit 78 originally served as a control, received eight injections of an isofiltrate without apparent effect. Control rabbit 82 in this group is apparently immune to this type of tumor, since he withstood four attempts at establishment of the tumor. When one compares the longevity of the rabbits in the three groups of experiment 1, it is apparent that the injected animals did not seem to possess a striking advantage over the controls.

In experiment 2 (table 2) a group of rabbits was given a "prophylactic" or preliminary course of intravenous and subcutaneous injections of filtrate. After this the rabbits were given inoculations with the tumor taken from untreated animals having actively growing tumor. Subsequent injections also were given, the total number of injections being indicated in the table. The results in group D may well be thrown out. The tumor transplants coming from rabbit 75 apparently fell on unfertile soil, as rabbits 76 and 82 have repeatedly shown themselves to be immune. In group E, however, it will be noted that the span of life of the rabbits receiving the injections was not prolonged.

Another experiment consisted of inoculating three rabbits with tumor from a rabbit that had received injections of filtrate on the preceding eight days. No further treatment was given these three animals. The transplants of tumor took in every case. Today, seventy-one days following the inoculation, two rabbits are showing progressive cachexia. In the third rabbit the tumor growth is apparently arrested or is perhaps even regressing, although the primary tumor still measures 3 by 2.5 by 0.5 cm. in its various diameters.

In experiment 3 (table 3) tumor tissue was removed from rabbits that had just received a course of treatment consisting of daily injections (forty-one and thirty-one) of filtrate. This tissue was immediately transplanted to two other groups of rabbits, which had then just completed a course of preliminary or prophylactic injections of filtrate. The injections were then continued without interruption to date or until the animals died. Examination of table 3 shows that the length of life or condition of the rabbits was not significantly altered by the injections.

In experiment 4 (table 4) ten preliminary or "prophylactic" injections of the bacterial filtrate were given to rabbit 90 on the days immediately preceding inoculation with tumor. On the sixty-one days following the

TABLE 3.—*Experiment 3* *

	Rabbit Supplying Tumor	Number of Injections of Filtrate to Rabbit Supplying Tumor	Rabbit Receiving Tumor	Injections Given to Rabbit Receiving Tumor: Before Inoculation with Tumor	Injections Given to Rabbit Receiving Tumor: Total Number of Injections	Longevity After Inoculation with Tumor, Days	Comment
Experimental group F	76	41	76	41	138	97	Living; (?) immune to tumor
	76	41	19	25	89	74	Killed—extremis
	76	41	80	25	121	97	Living; tumor growing
	76	41	169	25	89	74	Killed—extremis
Control	76	41	82	..	..	97	Living; (?) immune to tumor
	76	41	181	..	..	97	Living; tumor growing
	76	41	187	..	..	68	Died from tumor metastases
Experimental group G	94	31	11	31	89	65	Killed—extremis
	94	31	13	31	122	88	Living; tumor growing
	94	31	15	31	117	81	Died from tumor metastases
Control	94	31	203	..	..	88	Killed—extremis
	94	31	204	..	..	63	Died from tumor metastases

* In these two groups, tumor from two rabbits which had received courses of injections of filtrate was inoculated into other rabbits which had already received preliminary or prophylactic injections of filtrate. Injections were then continued to date or until death of the animals.

TABLE 4.—*Experiment 4* *

	Rabbit Supplying Tumor	Number of Prophylactic Injections	Total Number of Injections	Rabbit Receiving Tumor	Number of Prophylactic Injections to Rabbit Receiving Tumor	Total Number of Injections	Longevity After Tumor Inoculation, Days	Comment
Experimental group H	90	10	71	185	10	89	70	Living; tumor growing
	90	10	71	205	10	89	70	Living; tumor growing
	90	10	71	207	10	65	35	Died of tumor metastases
Control	90	10	71	211	..	..	70	Living; (?) immune
	90	10	71	212	..	..	70	Living; tumor growing
	90	10	71	213	..	..	61	Died of tumor metastases

* In the experiment tabulated here, three rabbits which had received prophylactic injections of filtrate were inoculated with tumor taken from a rabbit which had had ten prophylactic injections and sixty-one subsequent injections. Injections into the three rabbits were continued to date or until death of the animals.

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inoculation with tumor the injections were continued, the rabbit receiving in all seventy-one injections. Tumor fragments from this rabbit were now transplanted into six rabbits. Three of these, rabbits 205, 206 and 207, had by this time already received nineteen prophylactic injections. The injections of filtrate into these three rabbits were continued to date or until the death of the animal. At present four of the six rabbits in this group are living. In two of the treated rabbits the tumors and metastases are apparently still growing. One treated animal died on the twenty-sixth day following inoculation with tumor. In the control group one rabbit died of tumor metastases on the sixty-second day. Examination of table 4 will show that no apparent protection was conferred on the rabbits receiving the filtrate.

In experiment 5 the tumor was first passed through two hosts that had received injections of the filtrate before and after the inoculation with tumor. The first of these, rabbit 90, had received ten prophylactic injections and sixty-one injections after the inoculation with tumor. Tissue from this rabbit was then transplanted into rabbit 207, which by this time already had received nineteen prophylactic injections. Injections were continued in this rabbit, twenty-six more being given.

TABLE 5.—*Experiment 5* *

	Rabbit Supplying Tumor	Number of Prophylactic Injections	Total Number of Injections	Rabbit Receiving Tumor	Number of Prophylactic Injections to This Rabbit	Total Number of Injections	Longevity After Tumor Inoculation, Days	Comment
Experimental group 1	207	19	65	214	13	58	63	Living; tumor growing
	207	19	65	215	13	58	63	Living; (?) immune; no take
	207	19	65	216	13	58	63	Living; tumor growing
Control	207	19	65	217	..	..	63	Living; tumor growing
	207	19	65	218	..	..	63	Living; tumor growing

* The P and F_1 generations of the hosts having tumor received prophylactic injections prior to inoculation with tumor. Injections of filtrate were also continued afterward until tumor tissue was removed for transfer to F_1 and F_2. These rabbits of the latter group (numbers 214, 215 and 216) were likewise given prophylactic injections of the filtrate. Injections following inoculation with tumor were continued to date.

Tumor from the second rabbit (207) was then inoculated into the five rabbits listed in table 5, which summarizes this experiment. If one discounts the case of rabbit 215, in which the tumor failed to take, it will be noted that the two rabbits which received the injections are apparently in the same clinical condition as are the two untreated controls. The tumor has thus passed through three generations of treated hosts and at the present time appears to be capable of unchecked growth, since all the rabbits in which the tumor took have growing primary and metastatic tumors, even while the daily injections are being continued.

Further evidence to indicate that injection of the filtrate does not alter significantly (1) the number of takes, (2) the percentage of tumors the growth of which has become static or regressive, (3) the progressive growth of the tumors and (4) the number of animals dying of tumor metastases is illustrated in table 6. This table presents a general summary, without regard to the particular type of treatment in the various experiments. Rabbits 78 and 81 might perhaps be more properly listed under the nontreated column, as they received only a small number of injections before they died of tumor metastases. Since the number of controls practically equaled the number of injected animals, the striking parallelism in the clinical course of the various groups seems significant.

Examination of Tissue.—No difference could be observed in the growth habits of the tumor in the treated and the nontreated animals. The usual mode of dissemination of the tumor inoculated in the testis is by extension along the spermatic cord to the pelvis. Metastatic nodules are frequently found in the retroperitoneal and omental glands. The kidneys were secondarily involved in a large percentage of cases. Metastases were also commonly found in the liver, spleen, lungs and mediastinum. Less often they are found under the skin or in the eyes. The abdominal and renal metastatic tumors are readily palpable in the living animal. Frequently the larger tumors become necrotic in their centers, presumably because of inadequate blood supply. Special pains were taken to observe whether more necrosis occurred in the treated or in the nontreated groups of animals. No constant difference could be found. Microscopic preparations likewise failed to reveal any recognizable and characteristic morphologic changes as a result of the injections. In no case did the microscopic picture present evidence that the treatment destroyed the actively invasive appearance of the tumor.[8]

SUMMARY

The sterile filtrate of B. histolyticus growing on the Brown-Pearce rabbit epithelioma was injected under a variety of experimental conditions into rabbits having the same type of tumor from which the filtrate was prepared. Injections of this filtrate were found to have no apparent effect on the rate of growth of the tumor or on the microscopic appearance of the tissue. Even when the tumor was propagated through two generations of hosts, both of which had received injections of the bacterial filtrate before and after inoculation with the tumor, its highly malignant potentialities were not checked.

TABLE 6.—*General Summary of the Preceding Tables* *

No take		Tumor Growth Static or Regressive		Tumor Growth Progressive		Died of Tumor Metastases	
Treated	Nontreated	Treated	Nontreated	Treated	Nontreated	Treated	Nontreated
78	82	89	87	89	87	74	73
215	211	90	90	13	201	77	75
...	...	205	210	205	209	78	84
...	...	...	...	214	208	79	85
...	...	...	...	216	213	81	86
...	...	...	...	...	217	89	201
...	...	...	...	...	218	90	203
...	...	...	...	...	...	91	204
...	...	...	...	...	...	93	213
...	...	...	...	...	...	99	...
...	...	...	...	...	...	100	...
...	...	...	...	...	...	19	...
...	...	...	...	...	...	12	...
...	...	...	...	...	...	207	...
...	...	...	...	...	...	15	...

* The figures represent the identification numbers of the rabbits.

8. The author is indebted to Dr. William B. Hawkins, associate professor of pathology, University of Rochester School of Medicine and Dentistry, for reviewing with him all the microscopic slides prepared in connection with this study.

RESULTS OBTAINED BY THE USE OF FEVER THERAPY

IN THREE TYPES OF CASES USUALLY REFRACTORY TO OTHER TYPES OF TREATMENT

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DALLAS, TEXAS

The principles underlying the use of fever therapy in the treatment of certain infectious and allergic conditions are only partially understood. It is not my purpose in this report to enter into a theoretical discussion of these principles. I wish to report the striking results obtained by the use of fever therapy in cases of gonorrheal ophthalmia, Sydenham's chorea, and a severe case of status asthmaticus.

GONORRHEAL OPHTHALMIA

This case is reported because of the excellent and immediate results following treatment with fever therapy.

J. D., a Negro boy, aged 6 years, was admitted to the Eye Service of the Cincinnati General Hospital, Feb. 20, 1935, chiefly because of a sore left eye of six days' duration. There was at first swelling and redness of the lids followed shortly by a profuse yellowish white discharge. There was no previous history of eye disease or genito-urinary infection. The temperature was 100 F., pulse 110, respiration rate 20. The patient was normally developed and well nourished. The right eye was completely normal. The left eye showed markedly swollen lids, much photophobia and lacrimation. There was severe conjunctivitis with ciliary injection and profuse purulent discharge. Two ulcers were present in the cornea; one was large and centrally placed with an irregular outline, and the other was circular, and the bases of both were covered with a gray purulent exudate. The left preauricular gland was palpable. A gram stain of the pus from the left eye showed many pus cells with only gram-negative intracellular diplococci in great numbers.

February 21 the patient was given fever therapy by means of the Kettering Hypertherm. A temperature was maintained between 106 and 107 F. for seven hours. After this there was less injection and the ulcers appeared as scar with no exudate. There was little discharge, and careful search of stain specimens showed a few pus cells and no organisms. Although the eye continued steadily to improve and no gonococci were demonstrated, two more fever treatments of six hours each, between 106 and 107, were given. February 26 there was no photophobia, conjunctival injection or discharge. The small corneal ulcer was completely healed and there was only a superficial scar and a nebulous opacity at the site of the larger one.

The patient was discharged, March 13, with only a small nebular opacity at the site of the corneal ulcer. Examination later revealed further contraction of the scar.

This result was duplicated in another equally severe case of gonorrheal ophthalmia in May 1935.

SYDENHAM'S CHOREA

Six patients with Sydenham's chorea were treated with fever therapy by means of the Kettering Hypertherm. All were girls and their ages ranged from 8 to 15 years. There was no other outstanding manifestation of the rheumatic state, either active or inactive, except for the chorea. These cases were of the most severe type, the patients having been sick for from two weeks to ten months. They had been kept at complete bed rest and had been treated with all the ordinary measures and with much sedation. Still the condition remained of the most violent type, requiring continuous restraints to prevent self injury. Because of the difficulty in feeding, of vomiting and of excessive movements, all were very poorly nourished. All were given from three to five treatments at weekly intervals, each treatment consisting of from three to four hours, with temperature between 106 and 107 F. Shortly after the first treatment in each case there were fewer choreiform movements, and the patients rested with fewer sedatives. Improvement was slow but definite, and in from two to four weeks after the last treatment all involuntary movements had disappeared and the patients ate and slept normally. In only two cases was there the suggestion of choreiform movements under the stress of excitement. These cases have been followed for from two to eight months, and there has been no recurrence of symptoms in any. The following case is typical:

M. R., a white girl, aged 15 years, admitted to the Cincinnati General Hospital, April 7, 1935, had been noted to have queer facial grimaces two weeks previously. These had increased in severity, followed by excessive choreiform movements of the arms and legs and finally the inability to remain in bed without restraint. The patient could not speak and there was incontinence of urine and feces. The past history was irrelevant except for several acute infections of the upper respiratory tract during the winter months.

The patient was fairly well nourished. There were excessive involuntary movements of the entire body. The temperature was 100 F., the pulse 110, and the respiration rate 20. The blood pressure was 110 systolic, 80 diastolic. The only abnormal physical manifestations were an injected pharynx and dental caries. All deep tendon reflexes were hypo-active. The abdominal reflexes were absent and there were no positive reflexes of the pyramidal tract. The Wassermann reaction was negative. Examination of the blood revealed hemoglobin 80 per cent, red blood cells 5,000,000 and white blood cells 8,000, with a normal differential count. Urinalysis gave normal results.

April 11 the patient was given her first fever treatment, after which she was somewhat quiet. The chorea remained about the same until after the second treatment, a week later, at which time there was noticeable definite improvement. She continued to improve, the temperature became normal, and she was able to speak. She was given two more treatments, the last one on May 20. There has been no evidence of chorea since the last treatment, and after two months she is still well.

BRONCHIAL ASTHMA

Eight cases of severe intractable bronchial asthma were treated with fever therapy by means of the Kettering Hypertherm, at the Cincinnati General Hospital. All were of the most severe type, having presented this disease for from two to twenty years. Multiple sensitivities to bacteria, foods and pollens were present in each case. All patients had had severe attacks of status asthmaticus at repeated intervals, oxygen therapy having to be administered. Three of the patients had required considerable morphine, and frequent daily injections of epinephrine were necessary in all cases. The relief offered has been complete in three cases, lasting from two to six months. In four cases followed for from one to twelve months there has been only occasional mild recurrence, and in one case there was little or no improvement. No patient received more than four treatments at weekly intervals, each one consisting of from three to five hours of fever between 106 and 107 F.

From the Department of Fever Therapy, Cincinnati General Hospital.

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This type of therapy is not recommended as effecting consistent cure or even as a means of alleviating all bronchial asthma, but it is worth trying in severe asthmatic cases that respond to no other form of therapy. The following case report is an example of the type of case treated:

C. B., a white woman, aged 29, had symptoms of bronchial asthma in 1922, at which time she was 16 years of age. Her attacks increased in severity and duration and she was admitted to the Cincinnati General Hospital for the first time in 1929. At that time a complete physical examination was negative except for undernourishment and the typical manifestations of bronchial asthma. The sputum was mucoid and showed many eosinophils. Roentgen examination of the chest was entirely negative. Autogenous vaccine therapy was started with organisms from the upper respiratory tract.

Skin reactions were positive to inhalants, foods and bacteria. The patient had received more or less continuous vaccine therapy for the past four years, as well as the other ordinary measures for the treatment of bronchial asthma.

Since 1929 she had been admitted to the hospital repeatedly, many times being in such severe respiratory distress as to require continuous oxygen therapy for several days. Repeated roentgenograms revealed an increasing degree of emphysema. Jan. 30, 1935, she had her first fever treatment lasting for three hours, between 106 and 107 F. After the first two hours she could breathe freely. Although there were no evidences of asthma and she was symptom free, she was given two more treatments at weekly intervals. She has been followed closely up to July 1, 1935, and she has remained free from bronchial asthma and has gained 15 pounds (6.8 Kg.).

1310 Medical Arts Building.

Clinical Notes, Suggestions and New Instruments

FATAL IODODERMA FOLLOWING INJECTION OF IODIZED OIL FOR PULMONARY DIAGNOSIS

D. W. GOLDSTEIN, M.D., FORT SMITH, ARK.

Cases of iododerma and iodism[1] from iodized oil have previously been reported. In a review of the literature, however, no fatal case of iododerma has been encountered following the injection of iodized oil into the lung.

A very interesting case of fatal iododerma was recently reported by Eller and Fox.[2] These authors also reviewed the literature on the subject. Their case presented a polymorphous type of eruption. The individual lesions varied from small fleshy papules and crusted nodules to large fungating granulomatous tumors.

The dangers of the injection of iodized oil have been well expressed by the Council on Pharmacy and Chemistry of the American Medical Association.[3] The fact is emphasized that this is distinctly a surgical procedure involving more or less risk, and that before such a diagnostic measure is instituted the advantages and disadvantages of such a procedure should be carefully considered.

REPORT OF CASE

History.—R. C., a man, aged 47, was referred to me by Dr. J. D. Riley, superintendent of the Arkansas State Sanatorium, with the following history: He had been admitted to the sanatorium May 17, 1934, complaining of weakness and loss of weight. The physical examination revealed scattered râles at both bases. The rest of the physical examination was essentially negative.

Two days before entering Sparks Memorial Hospital of Fort Smith, Ark., 20 cc. of iodized oil[4] was injected into the lung for diagnosis. No unusual symptoms were noted following the injection. Immediate films showed no bronchiectasis. The following morning the fever was 101.4 F. At this time a papulopustular eruption was noted over the forehead and face, which gradually spread to the upper part of the chest

Distribution of lesions and bullae.

and the extensor surface of the arms and hands. The patient became nauseated and finally entered the hospital in a stupor, the result, no doubt, of a severe toxemia.

Examination.—The physical examination was essentially negative with the exception of the skin.

The patient presented an eruption that was more or less limited to the face and upper extremities, shown in the accompanying illustration. Over the extensor surfaces of the arms and the back of the hands were pea to hickory nut size discrete, thick walled bullae and pustules, some of which were definitely hemorrhagic. The face was markedly edematous and the eruption here was more diffuse in character. Most of the bullae and pustules had ruptured, forming large crusted moist areas. In addition, many verrucous and fungating lesions were noted. The scalp was also involved, but to a lesser extent. The tongue was moderately swollen and presented some hemorrhagic areas. The rest of the oral mucosae showed lesions of the vesicobullous type. Because of the marked lingual edema and lesions in the mouth, examination of the pharynx, larynx and adjacent structures was impossible.

The urine was tested for the presence of iodine. This was repeatedly positive; the specific gravity was 1.012; other observations were albumin 2 plus, granular casts 2 plus, a few blood cells and hyaline casts.

Examination of the blood showed hemoglobin 84 per cent, red blood cells 4,240,000 and leukocytes 21,000, with a differential count of polymorphonuclears 81 per cent, mononuclears 5 per cent and lymphocytes 14 per cent. The Kolmer Wassermann and Kahn tests were both negative.

Serum from the bullae was negative for iodine. Culture, however, showed a scattered growth of staphylococci.

The diagnosis was iododerma and acute glomerulonephritis.

Treatment.—Treatment consisted of the injection of physiologic solution of sodium chloride and dextrose intravenously. In spite of great caution there was rather marked irritation of the kidneys, due in part, no doubt, to excretion of the iodides. Because of this, further saline injections were discontinued. The rest of the general treatment was symptomatic in nature. Local treatment consisted of soothing applications of lotions and wet dressings.

Clinical Course.—In spite of therapy, new lesions developed and the toxemia increased. The lesions, which were at first

From the Cooper Clinic.

1. Firth, J. O.: Iodism, J. A. M. A. 100:110 (Jan. 14) 1933. Carmichael, D. A.: Iodine Poisoning and Iodism from Lipiodol, Canad. M. A. J. 30:319-320 (March) 1932.

2. Eller, J. J. and Fox, E. C.: Fatal Iododerma, Arch. Dermat. & Syph. 24:745 (Nov.) 1931.

3. Dangers of the Injection of Iodized Oils, J. A. M. A. 99:1946 (Dec. 3) 1932.

4. Lipiodol-Lafay was used.

present over the arms and face, gradually spread over most of the body. Three days prior to death, large bullae developed but soon ruptured, leaving moist, raw surfaces. The nephritis became more marked and the patient died twenty-six days after the onset of the present illness. Unfortunately postmortem examination was refused.

SUMMARY AND CONCLUSIONS

In a case of fatal iododerma following the injection of iodized oil into the lung for diagnosis, there was no question concerning the diagnosis, as evidenced by the history of injection of the drug into the bronchi, typical cutaneous lesions and demonstration of iodine in the urine. Although absorption from the bronchial mucosae is negligible, it is entirely conceivable that in a markedly sensitive or allergic individual a sufficient quantity could have been absorbed to be responsible for the eruption. Death, no doubt, ensued as a result of a nephritis plus an overwhelming toxemia.

Cooper Clinic Building.

A MODIFIED STAIN FOR STIPPLE CELLS IN LEAD POISONING

RUTH A. MCKINNEY, PH.D., AND SAUL ROSENZWEIG, M.D.
DETROIT

The increasing recognition of lead poisoning as an industrial hazard has stimulated the search for a rapid, reliable stain for the stipple cells found after lead absorption. Further experimentation with the Henderson stain[1] has demonstrated that Wright's blood stain may be substituted for the staining mixture recommended by Henderson. With this change it is possible not only to note and to count the stipple cells but also to make the usual differential count of the white blood cells at a single examination.

The three reagents required are kept for convenience in covered Coplin jars. The technic is as follows:

Fix dried smear in acetone-free methyl alcohol for from three to five minutes and transfer directly to Wright's stain (staining time predetermined for each lot of stain used); wash in tap water and transfer to dilute ammonia water (2.5 cc. of stronger ammonia water in 1,000 cc. of distilled water); dip up and down rapidly until blue color runs from slide; wash in tap water, dry and examine.

The finely stippled or coarsely dispersed "basophilic aggregations" in the red blood cells appear distinctly black against the gray or pink of the stained cell. The white blood cells retain the usual nuclear stain.

The ratio of lead-affected cells to the normal red cells is determined by an adaptation of the Fonio platelet counting technic.[2] A minute opening in a paper disk dropped into the ocular diaphragm gives a suitable counting field. The stipple cells and the normal red cells in each field are counted, but tabulated in separate columns, until 250 normal red cells have been counted. The number of stipple cells is then multiplied by 4, giving the ratio of such cells to 1,000 normal cells. The number of thousands of red blood cells per cubic millimeter multiplied by the number of stipple cells per thousand cells gives the approximate number of lead stipple cells per cubic millimeter of blood.

This staining method offers nothing fundamentally new; its chief advantage lies in the fact that a simplification and combination of two previous technics makes possible:

1. A rapid detection and enumeration of stipple cells in a spread which is also adequately stained for a differential count of the white blood cells.
2. The utilization of reagents usually found in any physician's office or clinical laboratory.
3. A technic which stains dried smears two months old as satisfactorily as fresh dried smears.

936 Holbrook Avenue.

From the North End Clinic.

1. Drexel, W. E.: Henderson Improved Stain for Stipple Cells, J. A. M. A. 90:733 (Feb. 27) 1932.
2. Fonio, A.: Ueber vergleichende Blutplättchenuntersuchungen: Ein Beitrag zur Frage der Methodik der Gerinnungs bestimmungen, Cor.-Bl. Schweiz. Ärzte 45:1505, 1915.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

HOGAN BREVATHERM SHORT WAVE DIATHERMY UNIT, MODEL 8800 (TWO-TUBE) ACCEPTABLE

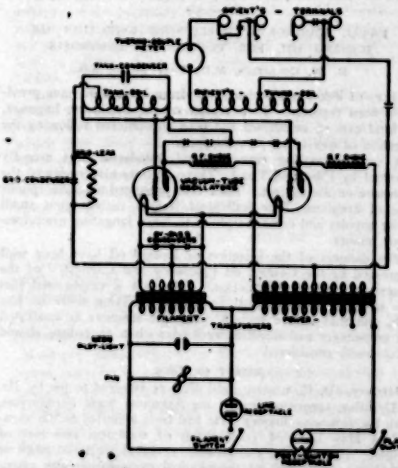
Manufacturer: McIntosh Electrical Corporation, Chicago.

This unit is designed to produce electric current oscillations of high frequency which are suitable for the production of heat within the body tissues and for surgical tissue cutting.

The circuit is of a well known, alternating current operated, push-pull oscillator type. The pick-up coil of the patient's circuit is inductively coupled to the oscillator or tank coil. The wavelength is approximately 23.3 meters. Under maximum load the power input is less than 1,000 watts. Since there is no acceptable method for measuring the output of short wave machines, this value is not given. The temperature rises of the transformers after operating the machine at full load for two hours came within the limit of safety prescribed by the Council. Both cuff and pad electrodes are furnished as standard equipment. The shipping weight of the unit is about 175 pounds.

Hogan Brevatherm Short Wave Diathermy Unit, Model 8800.

At the request of the Council the machine was investigated and the data were submitted for consideration. The tissue heating effect in the human thigh was observed. Cuff electrodes were applied to the thigh: one posterior to the hip, the other anterior to the knee. Thermocouples were introduced into the deep-lying tissues and also into the subcutaneous tissues. They were placed at a point midway between the hip and the knee, or midway between the cuff electrodes, and removed during the time of treatment. After twenty minutes' treatment, the machine being operated at the patient's tolerance, the temperaure rise and final temperature (average of five tests) were observed to be comparable to those temperatures obtained by conventional diathermy, which was



Schematic diagram of circuit.

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used as a control. The conventional diathermy currents were applied to the thigh by tinplate electrodes, one on the medial and one on the lateral aspect.

The cuff electrodes used in the investigation were made of metal surrounded by thick protecting felt and enclosed in a sateen bag. Several layers of toweling, a felt pad, or both materials, were placed next to the skin to absorb perspiration.

Burns may be produced by this machine, but they may be avoided by ordinary precaution; their likelihood to occur is much less than with conventional diathermy.

This unit was tested in a clinic acceptable to the Council; there the reports of the investigation were confirmed, and the machine was considered as giving satisfactory service for the purposes for which it is intended.

In view of the favorable report on the machine, based on its performance when cuff electrodes were used, the Council on Physical Therapy voted to include the Hogan Brevatherm Short Wave Diathermy Unit, Model 8800, in its list of accepted apparatus.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

SOLUTION LIVER EXTRACT-VALENTINE.—A solution of a water-soluble fraction extracted from edible livers of mammalian animals.

Actions and Uses.—Solution liver extract-Valentine is used in the treatment of pernicious anemia and sprue.

Dosage.—Solution liver extract-Valentine is administered orally. Ninety cubic centimeters, or 3 ounces, is the average daily dose; this is usually divided into three parts and administered at the end of each meal. The daily amount may be reduced to 60 cc., or 2 ounces, when the erythrocyte count reaches 4.5 million per cubic millimeter. If the count tends to increase above this level the quantity may be reduced to 30 cc., or 1 ounce, daily. The maintenance dose should be varied in keeping with the requirements of the individual patient.

Manufactured by the Valentine Company, Inc., Richmond, Va. No U. S. patent. U. S. trademark 298,963.

To prepare solution liver extract-Valentine, livers from edible animals are ground directly into water. The mixture is heated to approximately 90 C. to coagulate protein and to inactivate liver enzymes. The coagulated protein is then removed by filtration. Approximately 9 per cent of glycerin and 0.2 per cent of sodium chloride are added to the finished product.

AMYTAL (See New and Nonofficial Remedies, 1935, p. 94). The following dosage form has been accepted:

Tablets Amytal, ¼ Grain.

ORTAL SODIUM (See New and Nonofficial Remedies, 1935, p. 100).

The following dosage form has been accepted:

Kapseals Ortal Sodium with Phenacetin: Each kapseal (hermetically sealed capsule) contains ortal sodium 1½ grains (0.1 Gm.) and acetophenetidin (phenacetin) 3 grains (0.2 Gm.).

CALCIUM GLUCONATE (See New and Nonofficial Remedies, 1935, p. 139).

The following dosage form has been accepted:

Ampule Compound Solution of Calcium Gluconate 10%, 10 cc.-U. S. S. P. Co.—A solution containing in each 10 cc. calcium gluconate, 1 Gm. (15½ grains); dextrose anhydrous, 0.5 Gm. (7½ grains); citric acid, 0.037 Gm. (½ grain), and lactic acid, 0.1 Gm. (1½ grains).

Prepared by the United States Standard Products Company, Woodworth, Wis. U. S. patent applied for.

BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1935, p. 123).

The following dosage form has been accepted:

Bismuth Salicylate in Oil-U. S. S. P. Co.: A suspension of bismuth subsalicylate, U. S. P., 2 grains (0.13 Gm.) and chlorbutanol, 3 per cent, in neutral olive oil to make 1 cc. Marketed in bottles containing 1 ounce.

Prepared by the United States Standard Products Company, Woodworth, Wis.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C. BING, Secretary.

ANCHOR BRAND NUT OLEOMARGARINE
REX NUT BRAND OLEOMARGARINE
SUNLIGHT BRAND NUT OLEOMARGARINE
WISCONSIN MAID BRAND NUT OLEOMARGARINE
GOLDEN CREST BRAND OLEOMARGARINE
OHIO MAID BRAND OLEOMARGARINE

(CONTAIN 0.1 PER CENT OF SODIUM BENZOATE)

Manufacturer.—The Cudahy Packing Company, Chicago.

Description.—Oleomargarine prepared from hydrogenated, refined coconut and peanut oils, pasteurized cultured milk, salt and an emulsifying agent, a derivative of glycerin. Contains 0.1 per cent of sodium benzoate.

Manufacture.—Hydrogenated refined coconut and peanut oils are warmed and churned with pasteurized, cultured milk, salt and a derivative of glycerin. The resulting emulsion is solidified by spraying through ice water sprays, refrigerated, molded and automatically wrapped and packed in cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	15.0
Total solids	85.0
Ash	2.7
Sodium chloride	2.6
Fat (ether extract)	81.4
Protein (N × 6.25)	0.4
Carbohydrates (by difference)	0.5

Calories.—7.4 per gram; 210 per ounce.

CELLU BRAND CAULIFLOWER, WATER PACKED

Distributor.—Chicago Dietetic Supply House, Inc., Chicago.

Packer.—Eugene Fruit Growers Association, Eugene, Ore.

Description.—Canned cauliflower, packed in water.

Manufacture.—Selected cauliflower, delivered immediately after harvesting, is trimmed, cut into segments, and packed into cans by hand. The cans are filled with water, heated, sealed and processed.

Analysis (submitted by distributor).—

	per cent
Moisture	95.1
Total solids	4.9
Ash	0.5
Fat (ether extract)	0.4
Protein (N × 6.25)	1.1
Crude fiber	0.7
Starch (diastase method)	1.8
Carbohydrates other than crude fiber (by difference)	2.2

Calories.—0.2 per gram; 6 per ounce.

Claims of Distributor.—Choice quality cauliflower packed without added sugar or salt. For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

HAWAIIAN PINEAPPLE JUICE

1. NEW LIBERTY BRAND
2. WHAT CHEER BRAND

Distributors.—1. Prospect Supply Company, Yonkers, N. Y. 2. Rhode Island Wholesale Grocery Company, Providence, R. I.

Packer.—Hawaiian Pineapple Co., Ltd., San Francisco.

Description.—Canned Hawaiian pineapple juice retaining in high degree the natural vitamin content; the same as Dole Hawaiian Finest Quality Pineapple Juice (Unsweetened) (THE JOURNAL, June 3, 1933, p. 1769).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street - - - Chicago, Ill.

Cable Address - - - - "Medic, Chicago"

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SATURDAY, MAY 9, 1936

UNSOLVED PROBLEMS IN AMEBIASIS

Despite the remarkable advance in knowledge of amebas and the infections which they cause, many important problems remain for further study. Craig,[1] long a distinguished student of parasitologic problems, has recently reviewed three such problems. The first concerns the question of the existence of an avirulent strain of Endamoeba histolytica. The absence of definite symptomatology in many persons harboring this parasite has led, he states, to the belief that there must exist strains that are nonpathogenic and that such strains may live in the human intestine for indefinite periods. Brumpt and Simic have made observations tending to show that there is another ameba which is nonpathogenic but identical in morphology and life history with Endamoeba histolytica. Many other observers, however, have failed to confirm these results. Craig himself states that he has repeatedly produced dysenteric symptoms and ulcerative lesions in kittens with strains of Endamoeba histolytica from symptomless carriers. In one instance a cultural strain obtained from a presumably healthy carrier and cultivated for more than four years was pathogenic to kittens at the end of that period. He emphasizes the point, therefore, that the absence of symptoms in amebic infection does not mean that the strain that is present is not virulent as far as the production of lesions is concerned. The question of the existence of a harmless species must, he believes, be considered as still remaining unsolved, but it is of great importance.

The problem of variation in virulence of strains of Endamoeba histolytica is closely related. Whether the differences in virulence that exist are fixed characteristics of each strain or whether the virulence of a strain may be increased or decreased by cultivation and passage through experimental animals or man needs to be determined. As long ago as 1914 an increase in virulence in a strain of Endamoeba histolytica from a relapsing case of amebic dysentery after passage through kittens was reported. Since that time a number of investigators, especially Meleney and Frye, have appeared to corroborate the fact of variation in virulence of different strains. Frequently it has been noted that the virulence of some strains may be raised by passage through animals. A number of other investigators, however, fail to confirm this view. Craig concludes that there probably exist certain strains of Endamoeba histolytica which are naturally more virulent than other strains. Up to now, however, no strain of this organism has been demonstrated to be nonpathogenic or capable of living in the lumen of the bowel of man for indefinite periods without producing lesions. He feels also that the virulence of certain strains can be raised by continuous passage through kittens and dogs but that final proof that such an increase in virulence occurs during passage through man is not yet available.

Finally, the question of immunity to Endamoeba histolytica has received relatively little study. The only evidence of natural immunity is afforded by the epidemiology of the infection, but the data available are so scattered and so confusing that it is impossible to arrive at a conclusion regarding the true existence of natural immunity. In all regions where the incidence of amebic infection is high, a considerable proportion of the inhabitants escape infection although exposed apparently as much as those infected. This suggests but does not prove the existence of natural immunity. The spontaneous recovery of some persons from infection also points in this direction. Evidence of acquired immunity may be suggested from study of the so-called immune bodies produced in the blood stream by inoculation with cultures of Endamoeba histolytica or with antigens made from such cultures. Evidently specific complement fixing bodies occur in the blood of animals and human beings infected with Endamoeba histolytica and can be produced in animals by the injection of antigens prepared by the extraction of cultures of this parasite. The fact that such bodies exist and can be produced experimentally and that complement fixation occurs not only in persons suffering from amebic dysentery but also in carriers without symptoms and that in fact the reaction is stronger in such carriers than in those having active symptoms demonstrates that there exists a reaction between the tissues of the body and the parasite, resulting in the production of these substances. The relation of complement fixing bodies to immunity is at present unknown. Craig thinks it reasonable to conclude that these bodies indicate a reaction which in all probability leads to more or less immunity in infected animals or human beings; but as far as scientific data are concerned there is no support of this belief except that furnished by the epidemiology of the infection.

These are only a few of the numerous problems in amebiasis remaining to be solved. As has been repeatedly pointed out in these columns and elsewhere, the

1. Craig, C. F.: Some Unsolved Problems in the Parasitology of Amebiasis, J. Parasitol. 22:1 (Feb.) 1936.

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knowledge that amebic infections are widespread in temperate as well as in tropical and semitropical lands indicates the need for active investigation along these lines.

EIGHTIETH BIRTHDAY OF SIGMUND FREUD

On May 6 the world celebrated the eightieth birthday of Sigmund Freud. The difficulty of evaluating the influence of a contemporary is doubled in the case of Sigmund Freud; the inevitable phases of reaction and consternation always provoked by new discoveries have not yet been passed. The influence of the freudian concepts has been universal and not restricted to the theory and therapy of mental diseases. The concept of the unconscious has deeply modified the subjective attitude of human beings toward life and necessitated a thorough reorientation of our philosophic outlook. Human beings seem instinctively to resent the acknowledgment forced on them by Freud that even their own personalities are removed from the sovereign influence of their conscious selves and that they are not even complete masters of their own actions. The discovery of the unconscious has led to a striving to bring the unconscious under the domination of consciousness; this is the essence of the technic of psychoanalysis.

In spite of the tremendous influence of Freud on contemporary thought, it is still difficult to appreciate fully the nature and extent of his influence on his own field, modern psychiatry, and on medicine in general. Modern psychiatry is in a phase of fermentation and turbulent change. Its development has been characterized by two features: (1) the effort to give an accurate description of the clinical pictures of mental disturbances and classify them according to descriptive nosologic units, and (2) the attempt to follow in the study and therapy of psychiatric disturbances the principles prevailing in the rest of medicine. Perhaps these tendencies have interfered with the development of psychiatry as a science. Psychiatry, in its concern to live up to the scientific standards of the rest of medicine, developed a distaste toward psychologic phenomena. These psychologic phenomena seemed reminiscent of obscure medieval ideas about evil spirits, exorcism and general metaphysical concepts. The emphasis on precise description became exaggerated into unwillingness to explain, and explanation and understanding were confused with speculation. Freud's great accomplishment consisted in introducing standardized psychologic methods for the investigation of psychologic phenomena, and in observing psychopathologic processes in the continuity of psychologic causality. This attempt was often considered contradictory to the attempt to understand psychic phenomena in terms of biology. Freud, however, emphasized biologic orientation. His scientific credo is that though psychic life must be understood in terms of psychology this knowledge must be gradually integrated with the somatic knowledge of the central nervous system and the process of life in general.

Psychoanalysis is offered at the same time as a method of therapy. Freud developed most of his theoretical ideas from observations made during his attempts to cure patients suffering from mental ailments. Psychoanalysis is set forth as etiologic therapy based on a knowledge of the nature of the pathologic condition instead of therapy based on empiricism. Only this etiologic orientation can explain the manner in which a therapist who began with the modest aim of helping hysterical patients discovered the unconscious mind as an entirely new territory of research.

Psychoanalysis provides an approach to a large group of sufferers who previously were almost neglected by medicine—the psychoneurotic. In this field temporary improvement obtained by the purposeful or unintentional use of suggestion has often been misjudged as a real therapeutic result. It is too early to pass final judgment on the therapeutic efficiency of psychoanalysis. Like all medical methods of therapy, it has definite limitations. In this field, as in others, the constitution of the patient is the unchangeable factor.

Sigmund Freud was born of Jewish parentage on May 6, 1856, at Freiburg in what is now Czechoslovakia. When 18 years old he entered the medical school in Vienna and from the beginning his interest was in the direction of psychiatry. The teachers who had the deepest influence on Freud's development in the university in Vienna were the great classic physiologist Ernst Brücke and the psychiatrist Meynert. The early phases of Freud's work in medicine were spent in the laboratory. He became an expert in brain anatomy and made valuable contributions to the pathology of infantile paralysis. In 1885 he was appointed lecturer in neuropathology on the basis of his histologic and neurologic publications. On Brücke's recommendation he received a traveling fellowship, which he used to go to Paris as a student of Charcot in the Salpêtrière. This trip may be considered one of those fortuitous events which so often become decisive for the further fate of individuals. No other man had a greater influence on Freud's later development than Charcot, unquestionably the greatest authority in neurology of those days. Charcot was an empiricist and a clinician in the best sense. His great reverence for facts enabled him to emancipate himself from the current theories and dogmas in medicine and to recognize the psychologic element in hysterical phenomena. By the help of the technic of hypnosis, Charcot in Paris and Bernheim and Liébeault in Nancy had been able to demonstrate experimentally the effect of unconscious psychic forces on behavior and neurotic symptom formation. A second decisive coincidence in Freud's life was his meeting with Joseph Breuer. Freud's enthusiam for his new field was intensified by Breuer's reports of his patient Anna, a hysterical young woman whom Breuer tried to cure through hypnosis. In a sense this patient may be considered as the inventor of the therapeutic

principle of psychoanalysis. To the free flow of her speech during hypnosis, by which she gave expression to forgotten and repressed traumatic experiences, she gave the name "talking cure." Though Freud eventually discarded the use of "cathartic hypnosis," even in the most modern technic of psychoanalysis the principle of this "talking cure" is still present in the form of free association.

From this time Freud's life began to center more and more around his efforts to understand and cure first mental disturbances and then the personality as a whole. For a long time he worked entirely alone and even severed his collaboration with Breuer, whose vision was more limited and who shrank back from those unusual phenomena which the deeper penetration into the unconscious soon revealed. It was not until 1902 that a number of young medical men began to gather around Freud. With few exceptions all have devoted their lives to the development of psychoanalysis.

Among the first to join Freud in his study of unconscious processes were the representatives of the Zurich school of psychiatry, most prominent of whom have been Bleuler, Jung, Eitingon and Abraham. Whereas Jung later became one of the dissenters and Bleuler's attitude has been checkered by repeated alternations between enthusiasm and antagonism, Eitingon and Abraham adhered consistently to the fundamental facts and principles of psychoanalysis and had a great share in its development and organization.

In 1910 an international psychoanalytic organization was formed, which, except for the period of the World War, has held an international congress every second year. At present almost every country of the world has psychoanalytic societies, the members of which are almost entirely, and in America exclusively, physicians. The first psychoanalytic institute in which training in psychoanalysis was conducted in a systematic way was founded by Eitingon in Berlin in 1919. Now a number of such institutes exist in different cities of Europe and America. The first psychoanalytic society in America was founded in New York under the leadership of Brill. The Chicago Psychoanalytic Institute, now partially supported by the Rockefeller Foundation, has been chiefly devoted, under Dr. Franz Alexander, to the study of psychophysiologic interrelationships as the most important means of integrating the freudian concepts with the medical and biologic sciences.

Today psychoanalysis and its followers are still somewhat isolated from the rest of medicine. No doubt the first bitter emotional reactions against the startling concepts of Freud are responsible for this isolation. Seen from historical perspective, however, the thirty year period of isolated development of psychoanalysis is not remarkable. The fight for the scientific study of the human body by dissection lasted for centuries; the unbiased objective study of the human personality must prevail over greater emotional obstacles.

Late in his career Freud is receiving official recognition in many places. His first recognition came from contemporary leaders of thought and literature, such as Thomas Mann in Germany and Romain Rolland in France. The city of Vienna made him an honorary citizen, and in 1930 he received the Goethe prize in Germany. He was elected an honorary member of the Royal Medical Society of England in 1935.

Freud's influence on medicine is no doubt still in its infancy. While the increasing interest in psychologic factors of somatic disorders should not be attributed wholly to Freud, no other man has contributed a greater stimulus toward study and understanding of psychologic phenomena.

His contributions to medicine and those on the application of psychoanalysis to the cultural fields are collected in twelve volumes, which have been published by the International Psychoanalytic Press. The position of Freud as a great leader is secure. Great epochs in medicine are defined by great leaders. As we associate Vesalius with anatomy, Harvey with physiology, Virchow with pathology and Pasteur with bacteriology, we shall come to consider Sigmund Freud as the founder of a new trend of thought in psychiatry—an investigator with a "profound insight into the workings of primitive mentality."

VITAMIN D MILK

The reports several years ago that vitamin D fed to infants or to chicks as irradiated ergosterol was not as effective as an equal number of rat units of cod liver oil have stimulated a number of investigations on the comparative merits of various antirachitic preparations. Because of the practicability of administering vitamin D to infants directly in milk, this fluid fortified with the vitamin, either by the addition of concentrates, by the feeding of irradiated yeast to the cow, or by the direct irradiation of the milk, has received special attention. Clinical experience with the different types of "vitamin D milk" has indicated that, in general, all these forms are effective to the extent of their unitage for both the prevention and the cure of rickets in infants. Unit for unit there appears to be no great difference between the antirachitic value of the three types. This opinion is borne out in one of the more recent studies on rachitic children.[1] As judged by roentgenograms and the concentrations of calcium and of phosphorus in the blood serum, the authors concluded that there were no practical differences between the antirachitic value of milk from cows fed irradiated yeast, sometimes called "yeast milk," and that of irradiated cow's milk. If a slight difference actually existed, it was thought to be in favor of the milk irradiated directly.

1. Gerstenberger, H. J.; Horesh, A. J.; Van Horn, A. L.; Krauss, W. E., and Bethke, R. M.: Antirachitic Cow's Milk: A Comparative Study of Antirachitic Value of Irradiated Cow's Milk and of Milk Produced by Cows Fed Irradiated Yeast, J. A. M. A. 104:816 (March 9) 1935.

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A recent experimental investigation on chicks,[2] however, seems to indicate that in this species a distinct difference exists between the antirachitic activities of "yeast milk" and of "irradiated milk." Day-old chicks were fed a rachitogenic basal diet either alone or supplemented by the various vitamin D preparations under investigation. These substances had previously been assayed on rats and therefore could be administered in comparable amounts on a rat unit basis. As an index to the antirachitic potency of the test substances, the ash content of the tibia was determined at the end of five weeks. The results demonstrated that "irradiated milk" is approximately ten times more effective than the same number of rat units of "yeast milk" and, further, that the antirachitic activity of the former compares favorably with that of cod liver oil and irradiated cholesterol. It is of some interest that the latter result confirms that of another investigator [3] regarding the relatively high efficiency of irradiated cholesterol as a source of vitamin D for the chick.

A distinct difference between the vitamin D content of the cream and that of the skim milk portion of "irradiated milk" and "yeast milk" was also described.[2] Nearly all the vitamin D potency in both cases was found in the cream, the skim milk fraction being almost inactive. Furthermore, as was found with the whole milk, the cream from the irradiated milk possessed a much greater vitamin D potency than that from yeast milk.

The foregoing investigation gives no support to the possibility that the baby chick can be used with greater accuracy than the rat for ascertaining the the antirachitic effectiveness of different vitamin D containing substances in infants. However, it is of some interest in this connection that, according to a recent clinical study,[4] the feeding of "yeast milk" to premature infants as the sole source of vitamin D proved to be inadequate for achieving complete protection against rickets.

Unfortunately, the antirachitic efficacy also of irradiated and other types of fortified milk was not studied, since it seems possible that under the physiologic strain imposed by premature birth these infants might have shown an exaggerated differential response to antirachitic agents perhaps similar to that found in the chick.

From the foregoing citations and from the results obtained in other pertinent investigations it would seem that the question of the relative merits of various antirachitic agents is far from solved and that there is an urgent need for further carefully conducted and controlled studies of the problem, particularly in full-term and premature infants.

2. Hanan, R. W., and Steenbock, Harry: The Differential Antirachitic Activity of Vitamin D Milks, J. Nutrition **10**: 653 (Dec.) 1935.
3. Waddell, J.: The Provitamin D of Cholesterol, J. Biol. Chem. **105**: 711 (July) 1934.
4. Davidson, L. T.; Merritt, Katharine K., and Chipman, S. S.: Prophylaxis of Rickets in Premature Infants with Vitamin D Milk, Am. J. Dis. Child. **51**: 1 (Jan.) 1936.

Current Comment

DESATURATION OF FATTY ACIDS

In 1908 Leathes proposed his now well known theory of desaturation of fatty acids by the liver. According to this view the liver not only selects preferentially the unsaturated fatty acids being absorbed from the intestine but also desaturates the fatty acids stored in the body depots prior to their oxidation. There is little doubt that the liver is a significant factor in the metabolism of fat but the recent experimental evidence has not all favored the view of its importance in desaturating fatty acids. Thus the modern conception of the nutritional indispensability of linoleic and linolenic acids—fatty acids with two and three double bonds, respectively—implies directly that neither the liver nor any other tissue can produce these compounds from more saturated ones. However, arachidonic acid with four double bonds has been found in considerable quantities in liver and other tissues despite the fact that this fatty acid is not ordinarily a constituent of the diet. This fact strongly points to synthesis in the animal body. In a recent report Schoenheimer and Rittenberg [1] provide evidence of a somewhat different kind for the transformation of saturated fatty acids to unsaturated ones. In two experiments mice were fed a diet containing a saturated fatty acid in which deuterium replaced some of the hydrogen. After seven or twelve days the total fatty acids of the mouse were separated into a saturated fatty acid fraction and an unsaturated fraction and the deuterium determined in each. In both experiments deuterium appeared in the unsaturated fatty acid fraction. As the amount of it was several times that appearing in the body water, the conclusion is drawn that the unsaturated fatty acids were derived from the saturated fatty acids. These experimental results obtained with ultramodern technic provide further evidence that the organism possesses the ability to desaturate fatty acids.

Association News

THE KANSAS CITY SESSION

Breakfast for Members of Section on Nervous and Mental Diseases

The neuropsychiatrists of Kansas City and the Missouri-Kansas Neuropsychiatric Association will give a breakfast for the members of the Section on Nervous and Mental Diseases of the American Medical Association at the Kansas City Club on the morning of Thursday, May 14, from 7:30 until 8:45 a. m. All members of the section in attendance at the Kansas City session are invited to attend this breakfast.

Alumni Banquet

The University of Illinois Medical Department Alumni banquet will be held in the main dining room of the University Club in Kansas City at 6:30 p. m., Wednesday, May 13. Dr. W. E. Keith, 100 Professional Building, Kansas City, Mo., is the local chairman in charge of arrangements for the banquet.

1. Schoenheimer Rudolf, and Rittenberg, D.: J. Biol. Chem. **111**: 505 (March) 1936.

BROADCASTS FROM THE KANSAS CITY SESSION

Special radio programs will be broadcast from Kansas City during the week of the annual session.

NATIONAL BROADCASTING COMPANY

The following programs will be delivered over a network of the National Broadcasting Company:

May 11, 3:30 p. m.: "Nutrition and the Future of Man," by Dr. James S. McLester, President of the American Medical Association. Fifteen minutes.

May 12, 3 p. m.: "Medicine Marching Forward." The regular dramatized program Your Health (originating in Chicago), based on papers or exhibits presented at the convention. Dr. W. W. Bauer. Thirty minutes.

May 13, 11 a. m.: An interview about the Scientific Exhibit with Dr. Morris Fishbein. Fifteen minutes.

COLUMBIA BROADCASTING SYSTEM

The following programs will be broadcast over a network of the Columbia Broadcasting System:

May 11, 1:30 p. m.: An interview with one or more distinguished foreign visitors by Dr. Morris Fishbein. Subject to be announced. Fifteen minutes.

May 15, 2 p. m.: A news broadcast outlining the main events of the convention. Dr. W. W. Bauer. Fifteen minutes.

May 15, 8:45 p. m.: "Medicine Yesterday and Today." An interview with dramatizations (originating in Chicago), based on papers or exhibits presented at the convention. Dr. Paul A. Teschner and the Columbia Broadcasting System commentator. Thirty minutes.

The hour given is central standard time; eastern standard time is one hour later, mountain time one hour earlier, and Pacific time two hours earlier. Daylight saving time in each locality is one hour later.

RADIO BROADCASTS

The American Medical Association broadcasts over WEAF, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern daylight time (3 o'clock central standard time, 2 o'clock mountain time, 1 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers the toast "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

Red Network.—The stations on the Red network of the National Broadcasting Company are

WEAF	WCSH	WBEN	KSD
WEEI	KYW	WCAE	WHO
WTIC	WFBR	WTAM	WOW
WJAR	WRC	WWJ	WDAF
WTAG	WGY	WMAQ	

Pacific Network.—The stations on the Pacific network are

KGO	KFI	KOMO	KPSD
KPO	KGW	KHQ	KTAR

Network programs are broadcast locally or omitted at the discretion of the local station. The lists indicate stations to which programs are available.

The last program of the present series is as follows:

May 12. Medicine Marching Forward, W. W. Bauer, M.D.

A new series is under consideration for the autumn and winter of 1936-1937. Announcement will be made in THE JOURNAL when arrangements are completed.

RAILROAD TICKETS TO THE KANSAS CITY SESSION OF THE AMERICAN MEDICAL ASSOCIATION, MAY 11-15

When you purchase your ticket to the Kansas City meeting of the American Medical Association, May 11-15, be sure to ask your railroad ticket agent for a certificate, which, when properly certified to and validated will entitle you to purchase a return ticket to your home over the same route traveled to Kansas City, at one-third the fare paid to Kansas City. No refund of fare will be made on account of failure to present a validated certificate when purchasing return ticket. For additional details about transportation to Kansas City see The JOURNAL of the American Medical Association of April 11, 1936, page 1281.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

State Medical Meeting in Coronado.—The sixty-fifth annual meeting of the California Medical Association will be held at the Hotel Del Coronado, Coronado, May 25-28, under the presidency of Dr. Robert A. Peers, Colfax. Among many other speakers will be the following physicians:

Jacob J. Singer, St. Louis, Newer Methods in the Treatment of Pulmonary Tuberculosis.
Franklin G. Ebaugh, Denver, Sleep Disturbances in Clinical Practice.
Leon Aacher, Berne, Switzerland, Synergic Reaction in Clinical Practice.
Campbell P. Howard, Montreal, Calcinosis, with Special Reference to Its Occurrence in Scleroderma.
Paul D. Foster, Los Angeles, and Alton B. Alsbier, New York, Smallpox Vaccine in the Treatment of Recurrent Herpes Simplex.
James E. Potter and Earl G. Longley, Bremerton, Wash., and Francis H. Redewill, San Francisco, Hyperpyrexia as an Adjunct in the Treatment of Cerebrospinal and Kahn-Fast Syphilis.
Harry H. Wilson, Los Angeles, Management of Alcoholism.
Francis M. Pottenger, Monrovia, The Tuberculous Cavity in Its Clinical and Public Health Aspects.
Philip H. Pierson, San Francisco, Silicosis.
J. Homer Woolsey, Woodland, Congenital Occlusion of the Intestinal Tract.
Francis M. Findlay, Santa Barbara, The Surgical Approach to Hypertension.
John B. de C. M. Saunders, San Francisco, Important Anatomical and Functional Features of the Distal Radio-Ulnar Joint.

Dr. Howard, who is professor of medicine at McGill University Faculty of Medicine, Montreal, will conduct a clinicopathologic conference Tuesday. Sunday, May 24, the cancer commission will conduct a conference on pathology at the Zoological Research Hospital, Balboa Park, San Diego, and one on radiology at the Hotel Del Coronado. Entertainment will include the past president's breakfast Tuesday morning, the state and county society officers' luncheon, the state golf tournament at the Coronado Country Club Tuesday afternoon and the dinner and reception to President Peers in the evening. The woman's auxiliary will hold its seventh annual session, May 24-28.

CONNECTICUT

Practically Free from Bovine Tuberculosis.—Connecticut is the thirty-ninth state to be admitted to the modified accredited area of states practically free from bovine tuberculosis, the U. S. Department of Agriculture announces. Tuberculosis eradication work among cattle in Connecticut was begun more than twenty-five years ago and has been in progress in cooperation with the federal government since 1918.

DISTRICT OF COLUMBIA

Medical Bill in Congress.—H. R. 12424 has been reported to the House, without amendment, proposing to examine and register beauty culturists in the District of Columbia.

Health at Washington.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended April 25, indicate that the highest mortality rate (20.3) appears for Washington and the rate for the group of cities as a whole was 13. The

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mortality rate for Washington for the corresponding period last year was 19.8 and for the group of cities, 12.6. The annual rate for eighty-six cities for the seventeen weeks of 1936 was 13.6 as against a rate of 12.6 for the corresponding period of last year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

GEORGIA

Society News.—A symposium on obstructive lesions of the genito-urinary tract was presented before the Fulton County Medical Society, April 16, by Drs. Montague L. Boyd, Edgar G. Ballenger, Omar F. Elder, Harold P. McDonald, William L. Champion and Samuel J. Sinkoe. Dr. Frank Kells Boland Jr., Atlanta, discussed "Postoperative Evisceration Among the Colored Race" before the society in Atlanta, April 2.

Death Rate from Malaria Declines.—A total of 377 deaths from malaria were reported for 1935 in Georgia, representing a death rate of 12.4 per hundred thousand of population. This compares with a rate of 11 in 1934. Dr. Thomas F. Abercrombie, Atlanta, director of the state department of public health, stated that 1935 was the first year since 1931 in which a gross decline from the previous year in the state death rate was recorded.

University News.—A trust fund with an annual income of $1,000 has been established by Mrs. Olivia A. Herbert to maintain the new equipment of the recently completed Milton Antony Wing of the University Hospital, University of Georgia School of Medicine, as a memorial to her husband, a son and a daughter. Mrs. Herbert donated $18,000 for the equipment last year. Dr. Alfred P. Briggs, assistant professor of internal medicine, St. Louis University School of Medicine, addressed members of the faculty and students, March 31, on renal function.

ILLINOIS

District Meeting.—The spring meeting of the Iowa and Illinois Central District Medical Association was held in Rock Island, April 9. Dr. William F. Schroeder, Rock Island, read a paper on "Use of Sodium Phenobarbital as a Preanesthetic," and Dr. Thomas G. Orr, Kansas City, Mo., discussed "Important Factors in Preoperative and Postoperative Therapy, with Special Reference to Intravenous Infusions."

Chicago

Society News.—At a meeting of the Chicago Society of Allergy, April 20, Drs. Carl A. Dragstedt spoke on "Mechanism of Anaphylaxis" and Theodore L. Squier and Frederick W. Madison, Milwaukee, "Hematologic Response in Food Allergy (Eosinophilia in the Leukopenic Index."——A symposium on physical therapy as employed in ophthalmology was presented before the Chicago Ophthalmological Society, April 20, by Drs. Oscar B. Nugent, James Larkin, James T. Case and John S. Coulter.——Dr. Frank J. Jirka, state health commissioner, addressed the Douglas Park Branch of the Chicago Medical Society, April 21, on activities of the state health department, while Dr. Harry J. Isaacs discussed the medical and surgical aspects of jaundice.——At a meeting of the Chicago Pediatric Society, April 21, the "Evaluation of Oxygen-Carbon Dioxide Mixtures in the Treatment of Pneumonia" was discussed by David J. Cohn, Ph.D., Dr. Albert L. Tannenbaum, A. Baird Hastings, Ph.D., and Dr. William Thalhimer.

IOWA

Annual Renewal Fees Due Before June 1.—All licenses to practice medicine and surgery in Iowa expire annually on June 30. To renew such a license a licentiate must make a written application to the state department of health before June 1, enclosing the renewal fee of $1. If a license expires by reason of the licentiate's failure to renew it, it can be reinstated without reexamination only on the recommendations of the board of health and the payment of the overdue fees.

Society News.—Dr. Clarence E. Van Epps, Iowa City, conducted a clinic on nervous diseases before the Washington County Medical Society in Washington, March 31.——Dr. Harold Dabney Kerr, Iowa City, discussed "X-Ray Therapy in Relation to Surgical Conditions" before the Black Hawk County Medical Society, March 17; Dr. Ewen M. MacEwen, dean of the State University of Iowa College of Medicine, Iowa City, was a guest at this meeting.——Dr. Hugh H. Young, Baltimore, addressed the Linn County Medical Society in Cedar Rapids, May 8, on urology.

Personal.—Dr. Leonard P. Ristine, superintendent of Cherokee State Hospital, Cherokee, has been appointed to a similar position at Mount Pleasant State Hospital, Mount Pleasant, succeeding Dr. M. Charles Macklin, resigned. Dr. Charles F. Obermann, head physician at the Hospital for Epileptics and School for Feebleminded, Woodward, will succeed Dr. Ristine at Cherokee.——Dr. James A. Edwards, superintendent of the State Sanatorium for Tuberculosis at Oakdale, was elected president of the Iowa Tuberculosis Association, March 19.——Dr. Charles F. Schilling has resigned as medical superintendent of Iowa Sanatorium and Hospital, Nevada.

KANSAS

Public Speakers Available.—The Shawnee County Medical Society announces that its members are now available to give medical lectures for the public. Any club or organization desiring a speaker may communicate with Dr. John L. Lattimore, chairman of the public relations committee, 618 Mills Building, Topeka. The purpose of this policy is to acquaint the public with disease, its causes, treatment and prevention. There will be no charge.

New County Societies Organized.—The Osage County Medical Society was organized at a meeting in Lyndon, March 18. Dr. George B. Kieruff, Melvern, was chosen president; Dr. Fred G. Schenck, Burlingame, vice president, and Dr. Charles W. Beasley, Lyndon, secretary. The organization of the Wabaunsee County Medical Society took place in Eskridge, March 19. Officers elected are Drs. Louis M. Tomlinson, Harveyville, president, and Charles L. Youngman, Harveyville, secretary.

Physicians Honored.—The Saline County Medical Society held a dinner meeting, March 9, in honor of Dr. Oliver D. Walker, Salina, who celebrated his fiftieth anniversary in the practice of medicine. Dr. Walker, who is 76 years of age, is a former president of the Kansas State Medical Society and the Saline County Medical Society. He is still in active practice.——Dr. George M. Gray, Kansas City, was guest of honor at a banquet, recently, given by friends and associates in recognition of his eightieth birthday.

MASSACHUSETTS

Health Association Changes Name.—The Massachusetts Association of Boards of Health, at its recent annual meeting, changed its name to the Massachusetts Public Health Association. Dr. Paul R. Withington, Milton, was chosen president of the association at this meeting.

Henry Jackson Lectures.—Dr. Tinsley R. Harrison, associate professor of medicine, Vanderbilt University School of Medicine, Nashville, gave the Henry Jackson Lectures of the New England Heart Association, April 30-May 1, at the Boston Medical Library. His subjects were "The Pathogenesis of Circulatory Failure" and "The Principles of Therapy in Patients with Congestive Heart Failure."

Advisory Council Named.—Dr. William B. Keeler, health commissioner of Boston, recently appointed the following to serve as an advisory health council:

Dr. John W. Bartol, president, Boston Health League.
Dr. Alexander S. Begg, dean, Boston University Medical School.
Samuel Prescott, dean of science, Massachusetts Institute of Technology.
Dr. Roger I. Lee, Boston.
Rev. Richard J. Quinlan, diocesan director of parochial schools.
Dr. Wilson G. Smillie, professor of public health administration, Harvard School of Public Health.
Dr. George Shattuck, assistant professor of tropical medicine, Harvard University School of Medicine.
Dr. Hyman Morrison, professor of clinical medicine, Tufts College Medical School.
Mr. Horace Morison, vice chairman, Boston Health League.
Gertrude Peabody, vice president, Community Health Association.

The first advisory health council was created in 1918 by the late Commissioner Francis X. Mahoney.

MICHIGAN

Regional Training Center for Public Health Personnel.—The division of hygiene and public health of the University of Michigan, Ann Arbor, in cooperation with the U. S. Public Health Service, has been designated as a regional training center for public health personnel serving Michigan, Ohio, Indiana, Illinois and Nebraska, in accordance with plans made possible by the National Social Security Act, it is announced. Training of personnel began April 6 and will continue until July 25. The first twelve weeks' work will be offered at the university and the last four in practical field work in one or more counties of the state in which recognized county health units are in full operation. Three fields of training will be open for study: public health administration, medical officers of

health; public health engineering and sanitation, and public health nursing. State commissioners of health of each of the five states comprising the regional area have selected "trainees" for each of the courses in public health specified. Other students are admitted if they meet the entrance educational qualifications in medicine, sanitation and nursing. In addition to the regular teaching staff of the division of hygiene and public health, the following personnel has been added to conduct the work:

Carl Buck, Dr.P.H., field director, American Public Health Association.
W. Frank Walker, Dr.P.H., director, division of health studies, Commonwealth Fund.
Ira V. Hiscock, C.P.H., professor of public health, Yale University School of Medicine, New Haven.
Dr. Eugene L. Bishop, director of health, Tennessee Valley Authority.
Dr. Joseph W. Mountin, U. S. Public Health Service.
H. E. Miller, U. S. Public Health Service.
Dr. Leslie L. Lumsden, U. S. Public Health Service.
Ann M. Hellner (public health nursing).

MISSOURI

Dr. Cole to Head Department of Surgery in Chicago.—Dr. Warren H. Cole, assistant professor of clinical surgery, Washington University School of Medicine, St. Louis, has been named professor and head of the department of surgery, University of Illinois College of Medicine, Chicago, to succeed the late Dr. Carl Hedblom. The appointment is effective September 1. Dr. Cole, who is 37 years of age, graduated from Washington University School of Medicine in 1920.

Annual Spring Clinics.—The St. Joseph Clinical Society held its annual spring clinics at the Robidoux Hotel, St. Joseph, March 23-25. Dr. William W. Bauer, director, Bureau of Health and Public Instruction, American Medical Association, Chicago, addressed a public meeting Monday evening on "Popular Beliefs That Are Not So." Guest speakers at the clinics and some of their subjects were:

Dr. Bauer, The Physician as a Health Educator.
Dr. Augustus G. Pohlman, Omaha, The Physiology of the Changes in the Circulatory System at Birth.
Dr. Chester A. Stewart, Minneapolis, Treatment of Epilepsy in Children.
Dr. Harry L. Smith, Rochester, Minn., Syncope of Patients with Hypersensitive Carotid Reflexes.
Dr. William H. Olmsted, St. Louis, Present-Day Diabetic Diets.
Dr. Roland M. Klemme, St. Louis, Diagnosis and Treatment of Intracranial Lesions.
Dr. Ferdinand C. Helwig, Kansas City, Kan., Radiosensitivity and Radioresistance in the Therapy of Malignant Disease.
Dr. Meyer Wiener, St. Louis, Eye Findings and Their Interpretation in Intracranial Lesions.
Dr. Ray M. Balyeat, Oklahoma City, The Therapeutic Value of Intratracheal Iodized Oil as an Adjunct in the Treatment of Intractable Asthma.

The banquet Tuesday evening was addressed by Dr. Stewart and Dr. Roger L. J. Kennedy, Rochester, Minn., on "Prevention and Treatment of Tuberculosis" and "Some Diseases in Children Accompanied by Changes in the Skeleton and Extraskeletal Tissues" respectively. The banquet session Wednesday evening was a joint meeting with the Buchanan County Medical Society. Speakers were Drs. Olmsted on "Physiology of Bulky Foods in the Treatment of Constipation"; Dr. Klemme, "Diagnosis and Accurate Differential Section in the Treatment of Trigeminal Neuralgia," and Dr. Duff S. Allen, St. Louis, "Some Newer Aspects in Surgery of the Thyroid."

NEW HAMPSHIRE

State Medical Meeting in Manchester.—The one hundred and forty-fifth annual meeting of the New Hampshire Medical Society will be held at the Hotel Carpenter, Manchester, May 26-27, under the presidency of Dr. Clifton S. Abbott, Laconia. Physicians presenting the program will include:

Joseph Dunbar Shields Jr., Concord, The Irritable Colon: Diagnosis and Treatment by the General Practitioner.
John D. Spring, Nashua, Artificial Pneumothorax in the Treatment of Tuberculosis.
Henry A. Christian, Boston, Diuretics and What They Do.
M. Dawson Tyson, Hanover, Problems in the Diagnosis and Treatment of Bronchiectasis.
Jesse O. Arnold, Philadelphia, More Rational Methods in the Prevention and Control of Eclampsia.
Morris Fishbein, Chicago, Public Relations of the Medical Profession.
Oswald S. Lowsley, New York, Recent Advances in Urologic Surgery, Including Renal and Prostatic Surgery. Experiences with a New Operation for Impotence.
William D. Stroud, Philadelphia, Coronary Disease, Including Angina Pectoris.

A symposium on pediatrics will be conducted Tuesday afternoon by Drs. Richard M. Smith, William E. Ladd and Richard Cannon Eley, all of Boston. On the same day Dr. Ellen A. Wallace, Manchester, will be presented with the fifty year membership gold medal. The annual banquet Wednesday evening will be addressed by Governor H. Styles Bridges, Dr. Abbott and Dr. Fishbein.

NEW JERSEY

Society News.—Drs. Burgess L. Gordon and Paul A. Bishop, Philadelphia, addressed the Camden County Medical Society, Camden, April 7, on "Tuberculosis in Childhood and the Teen Age" and "X-Ray Diagnosis" respectively.——Dr. George E. Pfahler, Philadelphia, addressed the Atlantic County Medical Society, Atlantic City, April 10, on "Treatment of Carcinoma of the Bladder."——The Society of Surgeons of New Jersey will hold its spring clinical meeting at Orange, May 27, with clinics at the Orange Memorial Hospital, golf in the afternoon and dinner at the Essex County Country Club, West Orange.——Benjamin Werne, editor of *Current Legal Thought*, addressed the Bergen County Medical Society, Hackensack, April 14, on "The Rôle of Medical Science in Preventive Justice."——Dr. Harry H. Satchwell, Irvington, addressed a joint meeting of the county societies of the first and second districts of the Medical Society of New Jersey at Newark, April 9, on "Medical Economic Security."

NEW YORK

Woman's Auxiliary Organized.—Wives of members of county societies met at the Waldorf-Astoria, New York, March 11 to organize the Woman's Auxiliary to the Medical Society of the State of New York. Mrs. John L. Bauer, Brooklyn, was elected president; Mrs. Francis R. Irving, Syracuse, president elect; Mrs. Edward A. Flemming, Brooklyn, and Mrs. Frederic E. Elliott, Brooklyn, vice presidents; Mrs. Henry L. Hirsch, Rochelle Centre, secretary, and Mrs. Daniel J. Swan, Flushing, treasurer. Dr. Frederic E. Sondern, New York, president of the state society, addressed the organization meeting.

Society News.—Dr. William Snow, New York, addressed a joint meeting of the Onondaga Medical Society and the Syracuse Eye, Ear, Nose and Throat Club, March 3, on "Topical Treatment of the Upper Respiratory Tract" and "Mechanical Factors in Acute Pulmonary Disease of Infants."——Dr. Russell L. Cecil, New York, addressed the Warren County Medical Society, Glens Falls, March 6, on "Newer Methods of Diagnosis and Treatment of Pneumonia."——The New York State Association of Public Health Laboratories will hold its twentieth annual meeting at Vassar College, Poughkeepsie, May 25.——Dr. Warfield T. Longcope, Baltimore, addressed the Syracuse Academy of Medicine, March 17, on "Pyelonephrosis."

New York City

Fellowship for Study of Emotions.—The Rockefeller Foundation has provided a research fellowship at the British Institute of Medical Psychology, London, beginning March 1. It is for research into the relation between the emotional and organic factors in certain physical disorders, *Science* reports.

Lord Horder Gives Janeway Lecture.—Lord Thomas Jeeves Horder, senior physician to St. Bartholomew's Hospital, London, will deliver the Edward Gamaliel Janeway Lecture, May 15, on "Direct Action in Medicine." The lecture will be given in the Blumenthal Auditorium, under the auspices of Mount Sinai Hospital of New York.

Medical Care for Relief Clients.—More than 81,500 home relief families required medical care in the three months between Dec. 15, 1935, and March 15, the Emergency Relief Bureau has reported. The number of cases was highest in February, when all records were broken with 33,400. Less than 10,000 needed care in the last half of December, 24,000 in January and 14,000 in the first half of March. During the three months there were about 56,000 assignments of physicians registered with the bureau and 4,200 nurses' visits; 152,000 prescriptions and 4,000 surgical and optical appliances were issued.

New Agency to Deal with Delinquent Children.—Mayor La Guardia has recently set up in the Children's Court of Manhattan a new agency known as the bureau of adjustments, to which delinquent children will be referred for study with a view to adjusting their problems without recourse to the courts. The new bureau is the first step in a program to be administered under a newly created Inter-Departmental Coordinating Board for Child Welfare, made up of representatives of eight branches of the city government, headed by Justice John Warren Hill of the Court of Domestic Relations. It will be the task of the board to coordinate the activities of all city departments having to do with child problems. Among the members of the board are Drs. Karl M. Bowman, head of the psychiatric division of the hospital department, and George T. Palmer, Dr.P.H., assistant health commissioner. A committee headed by C. C. Burlingham will coordinate the work of the new board with private agencies in the same field. It is planned to open bureaus of adjustment in all five boroughs.

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NORTH CAROLINA

Society News.—Dr. William D. Stroud, Philadelphia, addressed the Guilford County Medical Society, April 2, on "Coronary Disease."——The Tri-State Hospital Conference of North and South Carolina and Virginia was held in Richmond, April 16-17.——Drs. Robert P. Noble and Robert H. Hackler Jr., Raleigh, addressed the Wake County Medical Society, March 12, on "X-Rays in Treatment of Skin Disease" and "Physical Characteristics of X-Rays and Their Clinical Application" respectively. Dr. Emil Novak, Baltimore, addressed the society, April 8, on "The Endocrines in Gynecologic Practice."——At the semiannual meeting of the Eighth District Medical Association in Mount Airy, April 8, speakers included Drs. Charles O. Delaney, Winston-Salem, on "Treatment of Acquired Renal Dystrophia"; Carl V. Tyner, Leaksville, "Leukorrhea," and Samuel F. Ravenel, Greensboro, "Advances in Prevention and Treatment of Contagious Diseases."——Dr. William D. James, Hamlet, discussed cancer prevention at a meeting of the Rutherford County Medical Society, Forest City, April 16.

OHIO

Hospital News.—Typing service for the pneumonias and demonstration of the method of typing by the Neufeld technic have been made available to physicians of Hamilton County at the Cincinnati General Hospital, through the generosity of an anonymous donor, it is announced. For indigent patients, specific therapeutic serum will be donated.——Cameron Hospital, a $40,000 structure with a capacity of twenty-five beds, was opened April 5 at Bryan.

Conference of County Officers.—The council of the Ohio State Medical Association has invited officers of all county medical societies, with chairmen of their medical economics, public relations and legislative committees, to meet with officers of the state association for a conference in Columbus, April 26. Subjects to be discussed include medical care of the indigent, legislative problems and developments, workmen's compensation, the social security program in Ohio, promoting county medical society attendance and programs.

District Meeting.—The second councilor district of the Ohio State Medical Association held its annual meeting in Springfield, April 15. Guest speakers at an afternoon session were Drs. Albert M. Snell, Rochester, Minn., who discussed "Recent Studies in the Liver and Biliary Tract" and "Clinical Observations," and George M. Curtis, Columbus, "Iodine as Related to Thyroid Disease" and "Enlargements of the Spleen." Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, gave the address at the annual banquet at the Shawnee Hotel. The morning was devoted to clinics at the Springfield City Hospital.

PENNSYLVANIA

New Appointments to Advisory Health Board.—The following appointments to the state advisory health board were announced by Governor Earle, April 10: Dr. Moses Behrend, Philadelphia, succeeding Dr. Ross V. Patterson, Philadelphia; Dr. Richard J. Behan, Pittsburgh, succeeding Dr. William G. Turnbull, Philadelphia; Dr. Erwin S. Briggs, Warren, succeeding Dr. John M. Beck, Alexandria; Dr. Walter S. Brenholtz, Williamsport, succeeding Dr. Saylor J. McGhee, Lock Haven, and John A. Meehan, D.D.S., New Castle.

Philadelphia

Alumni Luncheon.—The Medical Alumni of the University of Pennsylvania will join in a luncheon at the Hotel Pennsylvania, Saturday, May 16. Dr. Charles W. Burr, Philadelphia, is president.

Packard Lecture.—Dr. Clifford G. Grulee, clinical professor of pediatrics, Rush Medical College, Chicago, delivered the annual Frederick A. Packard Memorial Lecture of the Philadelphia Pediatric Society, April 14. Dr. Grulee's subject was "Intracranial Hemorrhage of the New-Born."

Dr. Brumm Receives Strittmatter Award.—Dr. Seth A. Brumm received the thirteenth Dr. I. P. Strittmatter Award at the annual dinner and meeting of the Philadelphia County Medical Society, April 22, "in recognition of his accomplishments in the activities of organized medicine." Dr. Brumm, who is 54 years of age, graduated from the University of Pennsylvania School of Medicine in 1906. He was president of the county medical society for the year that began July 1, 1934. He was appointed chief of the division of communicable diseases of the Philadelphia Department of Health in 1932 and in the same year elected president of the Philadelphia Association of Tuberculosis Clinics. Dr. Frank H. Lahey, Boston, delivered the Dr. John Chalmers DaCosta Oration on "Management of Biliary Tract Disease."

TENNESSEE

Society News.—Dr. Andrew A. Eggston, New York, addressed the Nashville Academy of Medicine, April 21, on "Clinical Pathology in Relation to Diagnosis." Richard E. Scammon, Ph.D., Minneapolis, addressed the academy, April 7, on "The Guild of Medicine."——A symposium on heart diseases was presented before the Hamilton County Medical Society, Chattanooga, April 30, by Drs. Philip H. Levinson, Harold J. Starr, Howard P. Hewitt, Ashby M. Patterson and Frederick E. Marsh.——Dr. Homer Stirl Rule, Jacksboro, addressed the March meeting of the Campbell County Medical Society, LaFollette, on history, incidence and diagnosis of syphilis.——Dr. Elbert G. Wood, Knoxville, addressed the Knox County Medical Society, April 7, on "Toxemia of Late Pregnancy."

TEXAS

State Medical Meeting in Houston.—The seventieth annual session of the State Medical Association of Texas will be held in Houston, May 26-28, under the presidency of Dr. John H. Burleson, San Antonio, with headquarters at the Rice Hotel. The program includes the following guest speakers:

Eugene T. Leddy, Rochester, Minn., Roentgen-Ray Treatment of Severe Asthma.
Edward William Alton Ochsner, New Orleans, The Physiologic Treatment of Peptic Ulcer.
Marcus Pinson Neal, Columbia, Mo., The Reactive Blood Cells in Acute Infections.
Edward H. Rynearson, Rochester, Minn., Syndromes Resulting from the Hypofunction and Hyperfunction of the Endocrine Glands.
Charles J. Bloom, New Orleans, Thyrotoxicosis in Children.
Gershon J. Thompson, Rochester, Minn., Urinary Lithiasis.
Lawrence M. Randall, Rochester, Relief of Pain During Labor.
Oscar B. Nugent, Chicago, Interesting Facts About the Eyes.
Winfield K. Sharp Jr., New Orleans, The Social Security Act As It Relates to Public Health in Texas.

Memorial services will be held Wednesday. Related organizations meeting at this time include the Texas Railway Surgeons Association, Texas Neurological Society, Texas State Heart Association, the Conference of County and City Health Officers and the Texas Dermatological Society.

VIRGINIA

Faculty Changes at Medical College.—The Medical College of Virginia, Richmond, recently made the following promotions for the session of 1936-1937: Rolland J. Main, Ph.D., to be associate professor of physiology; Drs. William D. Suggs, assistant professor of obstetrics, and Lawther J. Whitehead, assistant professor of radiology. Dr. William L. Peple, resigned, was made emeritus professor of clinical surgery.

Personal.—Dr. Thomas M. Parkins, coroner of Staunton, has been appointed health officer to succeed Dr. James Fairfax Fulton.——Maximilian Ehrenstein, Ph.D., research fellow in physiology, University of Virginia Department of Medicine, has been awarded one of the prizes of the van't Hoff Fund by the Royal Academy of Sciences at Amsterdam, in recognition of his work on the alkaloids of tobacco and the catalytic dehydrogenation of cyclic bases.

WASHINGTON

Increase in the Death Rate.—The mortality rate for Washington in 1935 was 11.2 per thousand of population, compared with 10.9 in 1934, the state health department reports. It is reported that of 18,217 deaths, 4,751 were caused by diseases of the circulatory system, 2,233 by cancer and other tumors, 1,518 by cerebral hemorrhage, and 1,524 by diseases of the genito-urinary system. Deaths from automobile accidents declined by forty from 1934, the number for 1935 being 570. The infant mortality rate increased from 43.2 in 1934 to 45.1 for last year. Deaths of mothers in childbirth numbered 117, ten higher than in 1934.

Society News.—Drs. Charles P. Wilson and Arthur J. McLean, Portland, addressed the Cowlitz County Medical Society, Longview, in March on "Diagnosis and Treatment of Rheumatism" and "Spinal Injuries" respectively.——Dr. George W. Swift, Seattle, addressed the Spokane County Medical Society, Spokane, in March on "Spinal Drainage in Treatment of Head Injuries."——Drs. George R. Marshall, Seattle, and Kenneth K. Sherwood, Kirkland, addressed the Yakima County Medical Society in March on "Proctologic Examinations" and

"Chronic Arthritis" respectively.——Dr. Jackson K. Holloway, Seattle, discussed inguinal hernia with report of a case of hydrocele of the canal of Nuck before the King County Medical Society, May 4, and Dr. Kenneth K. Sherwood, Kirkland, "Natural Course of Post-Traumatic and Gonorrheal Arthritis." The society was addressed, April 20, by Drs. Homer D. Dudley and Hilton W. Rose, Seattle, on "Sacculated Varix of the Femoral Vein" and "Cool Water Treatment of Burns" respectively.

WISCONSIN

Personal.—Dr. Ethan B. Pfefferkorn, Oshkosh, has been appointed assistant state health officer to succeed Dr. Guy W. Henika, Madison.——Dr. Adolf Gundersen, La Crosse, and Mr. J. George Crownhart, Madison, secretary, State Medical Society of Wisconsin, are members of a committee recently appointed by Governor La Follette to study administration of relief, federal aid and state institutions.

Digest of Laws on Care of Indigent Sick.—The State Medical Society of Wisconsin, through its department of legal medicine, has recently issued the sixth edition of a "Summary of Wisconsin Poor Relief Laws Affecting Care of Indigent Sick." The pamphlet contains excerpts from the statutes and statements of principles drawn from court decisions, attorney generals' decisions and other available authorities. Thirty-two questions are dealt with, including authorization of relief, definitions of the indigent, emergency relief, the physician's problem with persons obviously indigent but not able to get relief, obstetric cases, malpractice, hospitalization of various kinds, care of the handicapped and pensions. It closes with a resolution adopted by the state board of health, February 27, urging counties, cities, villages and towns to maintain an adequate medical relief program to take the place of that financed until recently by federal funds. Three points were emphasized by the board: right of the sick to have the physician of their choice, continuation of the manner of recompense used under the federal program and a policy of reasonable hospitalization when found essential to the welfare of the patient by the family physician.

GENERAL

Change in Date of Library Meeting.—The annual meeting of the Medical Library Association will be held in St. Paul, June 22-24, instead of May 25-27 in Rochester as previously announced.

Medical Bill in Congress.—*Bill Introduced:* H. R. 12492, introduced by Representative Colden, California, proposes to authorize an appropriation of such sum as may be necessary, not to exceed $2,000,000, to construct a marine hospital at Los Angeles Harbor, Los Angeles, for the accommodation of approximately 500 bed patients.

Winners in City Health Contest.—Detroit, Oakland, Syracuse, Schenectady, Brookline and Hibbing are the winning cities in the seventh annual interchamber health conservation contest conducted among cities by the Chamber of Commerce of the United States in cooperation with the American Public Health Association. The city contest, supported by a group of insurance companies, is to determine which municipalities of various populations are carrying on the most effective community public health programs, in an effort to prevent premature deaths and economic losses due to unnecessary illness.

Orthopedic Meeting.—The fiftieth annual meeting of the American Orthopedic Association will be held in Milwaukee, May 18-21, under the presidency of Dr. Frederick J. Gaenslen. Headquarters will be at the Hotel Schroeder. Speakers will include:

Dr. Richard B. Dillehunt, Portland, Ore., Reconstruction of Injured Elbows in Children.
Dr. William G. Turner, Montreal, Quebec, Fractures and Fracture-Dislocation of the Cervical Spine.
Drs. Marius N. Smith-Petersen and Paul L. Norton, Boston, Treatment of Bursitis.
Dr. Henry W. Meyerding, Rochester, Minn., Treatment of Giant-Cell Bone Tumors.
Dr. Eben J. Carey, Milwaukee, The Wave Mechanics of Muscle Motion.
Dr. Zabdiel B. Adams, Boston, Occurrence of Abscesses from Hips That Are Firmly Ankylosed.

Research Conference.—The departments of biology, chemistry and physics of Johns Hopkins University will hold a research conference at Gibson Island near Baltimore, June 22-July 24. The tentative program gives the following topics for discussion: nuclear physics, photochemistry, tissue respiration, chemistry of olefins from petroleum and synthetic resins. The plan is flexible, varying from day to day according to the nature of the topic under discussion and the wishes of those participating. A somewhat formal lecture will open the day's program, outlining some field of research and directing attention to its unsolved problem, and will be followed by a discussion in which each one present takes part, making what contribution he can to the solution of the problems presented. The conferences are intended to combine mental stimulation, pleasant personal contacts and healthful recreation. Further information may be obtained from Neil E. Gordon, department of chemistry, Johns Hopkins University, Baltimore.

Association for Study of Internal Secretions.—The twentieth annual meeting of the Association for the Study of Internal Secretions will be held at the Hotel Baltimore, Kansas City, Mo., May 11-12. Speakers will include the following:

Roland K. Meyer, Ph.D., and Dr. Elmer L. Sevringhaus, Madison, Wis., Gonadotropic Inhibitory Substances in Blood of Women and Monkeys After Anterior Pituitary Therapy.
Edward A. Doisy, Ph.D., St. Louis, Isolation of One of the Active Principles of the Ovary.
Dr. Hector Mortimer, Montreal, Hormone Relationship Between the Female Organs of Sex and the Nasal Mucous Membrane.
Dr. Hans Lisser, San Francisco, Two and One-Half Years' Observation of a Patient with Cushing's Disease, Following Removal of a Pars Intermedia Adenoma.
Dr. James B. Collip, Montreal, Further Studies in Anterior Pituitary Physiology.

At the annual dinner, Monday evening, Dr. Francis M. Pottinger, Monrovia, Calif., will deliver the presidential address, and Dr. Roy G. Hoskins, Boston, will speak on "Broader Aspects of Endocrinology."

Eastern Physical Therapy Meeting.—The spring session of the eastern section of the American Congress of Physical Therapy will be held at the Philadelphia County Medical Building, Philadelphia, May 27-28, under the presidency of Dr. William H. Schmidt. The following physicians will present papers:

John de P. Currence, New York, Physical Therapy in the Treatment of Arthritis.
Jerome Weiss, Brooklyn, Physical Therapy in Orthopedic Conditions.
Madge C. L. McGuinness, New York, Danger of Overtreatment in Physical Therapy.
William Bierman, New York, president-elect of the congress, Temperature of the Surface of the Skin.
Gervase J. P. Barger, Washington, D. C., Fever Therapy in Office Practice.
Norman E. Titus, New York, Treatment of Erysipelas with Ultraviolet Energy.

A joint meeting with the Philadelphia County Medical Society, Wednesday evening, will be addressed by Drs. Eugene M. Landis and Lewis H. Hitzrog, Philadelphia, on "Evaluation of Suction Pressure in Peripheral Vascular Disease," and Dr. Disraeli W. Kobak, Chicago, "Influence of Short Wave Radiation on Constituents of the Blood." All day Thursday will be devoted to clinics.

Symposium on Atmospheric Environment.—The Harvard School of Public Health, Boston, will conduct a symposium on the atmospheric environment and its effect on man, August 24-29. One day will be devoted to the pneumoconioses with the following speakers:

Mr. Philip Drinker, associate professor of industrial hygiene, Harvard School of Public Health, Etiology.
Dr. William Irving Clark, assistant professor of the practice of industrial medicine, Clinical Aspects, Diagnoses, Prevention.
Mr. Theodore F. Hatch, instructor in industrial sanitation, Harvard Schools of Engineering and of Public Health, Control.
Mr. J. J. Bloomfield, sanitary engineer, U. S. Public Health Service, Protective Equipment.

Subjects to be discussed will include physical fitness for industrial and office jobs, fatigue, occurrence and significance of gaseous impurities, nontoxic odors in ventilation, and air condition in normal life. Speakers will include the following members of the Harvard faculty: Dr. Arlie V. Bock, Oliver professor of hygiene; David B. Dill, Ph.D., assistant professor of biologic chemistry; Dr. Wilson G. Smillie, professor of public health administration; Mr. William F. Wells, instructor in sanitary science; Dr. Cecil K. Drinker, professor of physiology and dean; Lawrence T. Fairhall, Ph.D., assistant professor of physiology; Mr. Constantin P. Yaglou; Mr. Louis A. Shaw, assistant professor of physiology. Additional speakers will be: Mr. William P. Yant, supervising chemist, health laboratory section, and supervising engineer, Pittsburgh Experiment Station, U. S. Bureau of Mines; Mr. Ole Singstad, chief consulting engineer on tunnels, Port of New York Authority, and Dr. Wolfgang F. von Oettingen, director, Haskell Laboratory of Industrial Toxicology, Wilmington, Del. The symposium will be concluded with a demonstration in the school of public health and visits to the industrial clinic, Norton Company, Worcester, Mass.; the Fletcher Granite Company, West Chelmsford, Mass., and the Fatigue Laboratory of Harvard Business School.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

March 28, 1936.

John Scott Haldane

Prof. John Scott Haldane, F.R.S., physiologist and philosopher, has died at his home in Oxford at the age of 75. Born at Edinburgh, he was educated at the university and also studied at Jena. He graduated in medicine in 1884 and became a demonstrator at the University of Dundee, where in collaboration with Professor Carnelly he made an extensive investigation of the inorganic impurities of the air of dwellings, schools and sewers. This was published in 1887, only three years after he was qualified, showing his early interest in the physiology of respiration, on which he became the greatest authority in the world, making discoveries which revolutionized our knowledge. Soon afterward he became demonstrator in physiologic chemistry at Oxford to his uncle Sir John Burdon Sanderson, the physiologist. He remained at Oxford for the rest of his life and carried out there researches of fundamental importance in physiology and also of great practical use. He investigated impurities of the air in mines and discovered the action of carbon monoxide, the poisonous constituent of after-damp. He introduced simple tests by which small though dangerous quantities of carbon monoxide could be detected, using small animals, such as birds and mice, which are affected more quickly than man. In 1896 he investigated for the government the cause of death in three colliery explosions. His report, which was translated into several languages, showed the means for combating in mines the dangers arising from explosions and fires.

Between 1892 and 1900 he introduced new methods for investigating rsepiratory functions which are widely used today—methods for determining the respiratory exchange, the amount of hemoglobin in the blood, the volume of the blood and the analysis of air. In 1905 he published (in association with Dr. Priestley) his most important discovery, that respiration is regulated by the tension of carbon dioxide in the arterial blood in the respiratory center, to which it is exquisitely sensitive. He thus gave the first insight into the extraordinary delicacy of the quantitative coordination of the activities of different parts of the body by chemical means. A few years later it was shown that carbon dioxide acted by diminishing the alkalinity of the blood. In 1905 he demonstrated the importance of wet bulb temperature in limiting the power to withstand a high temperature. In 1911 he led an expedition to Pike's Peak, Colorado, to study the effects of low barometric pressure and acclimatization to high altitudes. For the admiralty he investigated the problem of deep diving and showed how the risks of caisson disease could be abolished. In the war he was sent to the front as soon as poison gas was used by the Germans. His advice led to the adoption of the box type of respirator—the only adequate one.

HALDANE'S PHILOSOPHY

So far Haldane has been described as a great physiologist; but he had another side—the philosophical—which distinguishes him from all other physiologists. His philosophical bent was due to his Scotch blood. His brother Lord Haldane, lawyer and statesman, was also well known as a philosopher. Haldane's philosophy was not a diversion from his physiology but was intimately connected with it and indeed inspired his researches. Ever since he was a young man he combated the mechanistic theory of life, which is current among biologists and is widely spread by popular writers. He insisted that while a physicochemical interpretation of life had endless practical uses it was only a partial one, derived from abstracting certain aspects and neglecting the others. It ignored coordination, which was the dominant feature of life. The organism must be studied as a whole. All his work showed the amazing delicacy with which the different functions of the body are correlated in normal life. Biology he regarded as an independent science with different axioms and different methods of interpretation from those of chemistry and physics. He quoted the physicist Planck: "The conception of wholeness must be introduced into physics as into biology." Thus mathematical physics could be regarded as a backward branch of biology, in contrast to the view of some scientists that biology is only a complicated and therefore backward branch of mathematical physics. He pointed out the difficulty which confronted the mechanistic conception of life—that of giving any account of the maintained coordination which is so characteristic. "We can form no coherent mechanistic conception of how it is that the intensely labile living structure tends to return always to normality, how the breaking down process is so coordinated that the building up process accompanies it. Maintenance of normality is a fact present in all physiological activity and cannot be analyzed into separable physicochemical processes."

He held that the confusion caused by failure to distinguish biology from physical science was repeated when there was failure to distinguish psychology from biology. In conscious behavior there was something different from mere life, in which the unity extended only over spatially related phenomena. In conscious behavior the unity extended also over temporal relations; the past and the future were unified with the present by the interest which extended over them. Biology could not deal with personality or values; the science that dealt with them was psychology, which dealt with conscious experience. All our knowledge of the universe implied perception. In the natural sciences we did not directly consider this, but in psychology we had to. We could not jump out of our skin of perception to a world beyond it. An analysis of what is implied in perception would embrace all knowledge and so he reached the idealistic doctrine of Berkeley. All his life he strenuously combated materialism as an impossible philosophy. For him the universe was a universe of personality and the manifestation of God. But he rejected the usual religious view that a spiritual universe exists side by side with a physical one. He was thus a deeply religious man, who could not accept any of the religious creeds. Yet, because of his strong antagonism to materialism he was in demand as a lecturer by religious bodies. One of his last books, "Materialism," consists of a series of essays, some of which were delivered as lectures. It is noteworthy that one of these was delivered at a church and another at a synagogue. One might say of other physiologists that they were either materialists or never troubled about the question of materialism. But to Haldane materialism was an absurdity and the spiritual nature of the universe a fundamental doctrine, which he never was tired of teaching. In the last twenty years Haldane wrote and lectured much more on philosophy than on physiology, but his biologic approach to philosophy, as well as the position he took up, distinguished him from other philosophers. This work culminated in a small book, "The Philosophy of a Biologist," published in 1935. Recent British philosophy can be described as "idealism" in contrast to "realism," which regards physical interpretation as a final interpretation of external reality. In this sense and in this sense only Haldane's philosophy was idealistic. But in a deeper sense it was wholly realistic, as he regarded the universe as depicted in the sciences, not as a "mere appearance" but as the real universe imperfectly depicted. He summed up his philosophy thus: "The real universe is a universe of personality and the manifestation of God, its scientific aspects being only partial interpretations of it, the imperfect nature of which is revealed by philosophic criticism."

The Society for the Protection of Science and Learning

The Academic Assistance Council was formed in 1933 to assist scholars and scientists who on grounds of religion, race or opinion were unable to work in their own country. After doing excellent work it has decided to establish as its permanent successor the Society for the Protection of Science and Learning. It is proposed to build up an academic assistance fund for the purpose of awarding research scholarships in the universities of Great Britain and other countries. The fund will be administered under the auspices of the archbishop of Canterbury, the president of the Royal Society and the president of the British Academy, Lord Rutherford and Lord Horder. In an appeal for funds Lord Rutherford, who was president of the Academic Assistance Council, states that its services have been needed chiefly for 1,300 university teachers displaced in Germany, but it has also assisted refugee scholars from Russia, Portugal and other countries. In cooperation with other organizations the Council has assisted in permanently establishing 363 of the 700 displaced scholars who left Germany. A further 324 are still being temporarily maintained in universities and learned institutions while seeking more permanent positions. The council had hoped that its work might be required for only a temporary period but it is now convinced of the need for a permanent body to assist scholars the victims of political and religious persecution. The devastation of the German universities still continues. Not only teachers of Jewish descent but many others regarded as "politically unreliable" are affected. The appeal is being made with the full cooperation of the organizers of the national Christian appeal about to be made for destitute non-Jewish refugees from Germany, since the society will assist refugees irrespective of their religious affiliations. Support is therefore asked from both the Christian and the Jewish world, and in particular from the university world.

Voluntary Prenuptial Examination

Certificates of health before marriage have been advocated and every gradation exists from compulsory measures, such as exist in Germany and Turkey, and a purely voluntary measure, which is now suggested by the Eugenics Society. A committee of this society, mainly well known physicians, has prepared a schedule for the use of the physician in the examination. Two purposes might be served by such a schedule. The first, which is mainly in view in Germany, is to prevent the birth of defective children. The second is to promote the happiness of marriage by the early detection and treatment of such physical or psychologic abnormalities as might militate against the success of the marriage. The Eugenics Society states that its schedule is the only one in existence which serves both purposes. It includes questions not only on medical history but on psychologic and sexual problems which often present themselves to those about to marry. Many of these difficulties can be reduced or even removed by a frank talk with a physician.

The society advises that a person who wishes to be examined before marriage should approach his family physician. The society sends its schedule only to physicians who ask for it. If a physician desires an opinion on a problem of heredity arising from a doubtful family history, the society will help him through a board of specialists appointed for the purpose.

The schedule consists of three parts. Part I is devoted to family history and goes back as far as the grandparents. It includes questions as to cases of nervousness, nervous breakdown, mental backwardness, insanity, fainting spells, convulsions, suicide, alcohol and drug addiction, tuberculosis, diabetes, asthma, blindness or deafness in early life or any disease thought to be inherited. Part II is devoted to previous medical history and includes the usual questions of life insurance schedules. But there is a section on possible sexual problems. The applicant is asked simply to answer yes or no to the questions: "Do you understand fully the physical differences between the sexes, the nature of the sex act and the use of birth control? Is the subject of sex at all repugnant to you? Are you aware of any abnormal tendencies, fears or desires in your sex nature"? Women are asked if they understand about pregnancy or childbearing and whether they have any fear about this. Any difficulties about sex matters should be discussed with the physician. Part III is devoted to physical examination and is to be retained by the physician and not shown to the applicant. It consists of the usual questions for life insurance but includes abnormalities of the sex organs, sexual deviation and the Wassermann reaction.

Finally the following advice is given to the examining physician: The schedule is only for his use. If he has any difficulty he can refer it to a consultant. The society can help him only as regards a genetic problem. No opinion as to the success of a prospective marriage is infallible and this should be emphasized to the applicant. The marriage of first cousins is to be discouraged if there are in the common ancestry any defects or disease not due to environment. But with a good ancestry a marriage between cousins is not contraindicated. Neurotic persons are often preoccupied with sexual difficulties, and frank discussion with the physician may be beneficial. Difficulties with regard to masturbation usually disappear after marriage. A homosexual phase is common in the adolescence of both sexes, but the predominance of homosexual impulses in the adult is a serious matter.

PARIS

(From Our Regular Correspondent)

April 10, 1936.

Is Silicosis an Occupational Disease?

The pneumoconiosis problem is of great importance at present not only to departments of public health but also to those interested in hygiene. In spite of intensive study during recent years there is much to be learned regarding which forms of mineral dust are harmful, the clinical manifestations, and the relation of the disease to pulmonary tuberculosis.

At the February 18 meeting of the Académie de médecine the results of a thorough study of the question as it affects coal miners in Holland were presented by Vossenaar of Heerlen and Doubrow of Paris. The study was based on roentgenograms of 600 men who had been employed for more than ten years as coal miners. Sixty, or 10 per cent, had been engaged in this work for more than twenty years. This study led to the conclusion that: No clinical or roentgenographic evidence of pulmonary sclerosis can be obtained in normal individuals employed over a prolonged period in an atmosphere charged with dust containing silicates. There is no relation between the period at which the abnormal roentgenographic signs appear and the length of time the individual has been exposed to silicosis. Roentgenographic shadows similar in every respect are found in individuals suffering from pulmonary tuberculosis who have worked in silicate dust. It is probable that bacterial infection can cause chronic pneumopathies in those working in a dust-laden atmosphere; among such pneumopathies, tuberculosis is undoubtedly the most important and the most frequent. Dust in industrial occupations, from the standpoint of hygiene in general, constitutes a danger, even if the dust has no specific pathogenic action that ought to be combated by appropriate technical measures. These would, however, be only illusory unless associated with a rational antituberculosis campaign.

In the discussion, Rist stated that the view that silicosis is a clinical entity, i. e., a primary autonomous disease, has been generally abandoned. A silicosis will not affect a lung that is

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not already diseased, the pathologic condition in the majority of cases being tuberculosis. Some miners can go for as long as twenty-five years in a dust-laden atmosphere without developing any lung complications. On the other hand, one finds individuals who have never worked in a mine but who present roentgenographic signs that have been too hastily interpreted as being characteristic of silicosis and furthermore not to be distinguished from images seen in pulmonary tuberculosis. South African observers have found that those who have a supposed silicosis always die of tuberculosis. There is such a close relation between silicosis and tuberculosis that it is impossible at present to state in a given case whether there is a so-called pure silicosis or a silicosis associated with a pulmonary tuberculosis. Hence the difficulty existing in France and foreign countries in placing in the list of occupational diseases a syndrome so ill defined with regard to its character, cause and diagnosis as is silicosis.

Crouzon stated that this subject had been discussed at several meetings of the Medicolegal Society and that many different opinions were expressed. Certain authors think that silicosis per se can assume a rôle in the etiology of certain bronchopulmonary disorders and hence ought to be considered as an occupational disease. The result has been that silicosis is so regarded in France, a step which Rist believes was taken too hastily. Another group believes that the pathogenic rôle of silicosis is too little known at present. Pollet maintains that from the standpoint of indemnity and legal responsibility, if silicosis gives rise to a bronchopulmonary infection, silicosis must be regarded as an occupational disease. The Medicolegal Society therefore voted in favor of a more extensive study of the subject as to which victims of silicosis are entitled to be regarded as having an occupational disease. As a result of this discussion the Academy of Medicine named a special commission to investigate the question whether silicosis should be regarded as an occupational disease.

Pneumectomy for Cancer of the Lung

Pneumectomy for cancer of the lung is being actively discussed in France. It has been chosen as the subject of a report to be made at the next annual surgical congress, to be held in October. At the February 7 meeting of the Société médicale des hôpitaux of Paris a case was reported by Ameuille and his associates in which an unsuccessful attempt was made by Menegaux to perform a pneumectomy (right lower lobe) for cancer. The obstacles that have prevented more rapid development in this field of cancer surgery are difficult and too late diagnoses and inability to estimate the extent of adhesions and lymph node extension. Bronchoscopy is of some help in the diagnosis of a primary bronchial cancer but of no aid in the diagnosis of a primary invasion of the lung itself. In many cases only an exploratory thoracotomy will enable a diagnosis to be made. Such an operation can be followed by a pneumectomy and high voltage roentgen or radium therapy. In every case one should have as complete information as possible as to invasion of the cervical and axillary lymph nodes. In addition, an x-ray examination of the mediastinum should be made in conjunction with the use of opaque mediums in the trachea and esophagus in order to exclude invasion of these structures. An artificial pneumothorax followed immediately by fluoroscopy of the chest yields much information as to the presence and extent of adhesions, especially if any pleuritic exudate has been aspirated as a preparatory measure. Before attempting a pneumectomy, one must explore the condition of the other lobe or lobes of the lung, of the mediastinum, of the diaphragm and of the chest wall.

In the discussion, Justin-Besançon stated that progress in this field of surgery could be achieved only if an early diagnosis is made. Monod believed that the reason why there have been no cures so far in France is that the diagnosis is made too late. In a personal case a two-step operation was done. The tumor was between the aorta and the pulmonary artery, so that hemostasis was impossible. In another case, operation was possible even though there was an invasion of the mediastinum. The patient died suddenly two days later. Both of these operations were performed too late.

Acquired Natural Immunity Against Tetanus

The presence of tetanus antitoxin has been investigated in hundreds of serums by Ramon and Lemetayer, who have reported their results in the *Revue d'immunologie*. Specimens of blood were obtained from human beings and from different species of ruminants in Europe, Asia and Africa, as well as from horses, pigs, dogs and laboratory animals. The serum of ruminants contains tetanus antitoxin in more or less abundance according to their age, habits and mode of life. The serum of human beings, horses, dogs, pigs and laboratory animals does not contain a trace of the antitoxin. These facts explain the rarity of tetanus in adult ruminants and its frequency in the others just named. The authors believe that this acquired immunity in ruminants is due to the fact that the tetanus bacillus enters the body with the food, with resultant production of toxin, which in turn is attenuated by the products of fermentation of other bacteria and results in the elaboration of an antitoxin in the serum.

Streptococcic Infections Treated with Vincent Serum

At the meeting of the Académie de médecine, January 21, Professor Vincent reported a case of meningitis treated by Hamon and Bolzinger. This is the eighth case of meningitis, due to hemolytic streptococci, cured by serotherapy. The patient, a man of 20, had such a severe attack of meningitis of otitic origin that a fatal issue was feared. The Vincent antistreptococcus serum was given intravenously and by lumbar puncture. The organism disappeared from the spinal fluid following the serotherapy supplemented by mastoidectomy.

Before the Académie des sciences, Oct. 21, 1935, Professor Vincent stated that the invasion of the blood stream is governed by two essential conditions. The first depends on the state of allergy of the individual, the second on the fact that the streptococcus finds in the blood serum a medium little favorable to its growth and thus strains of streptococci develop that are seroresistant. There are at present reports of 310 cases of streptococcic cerebrospinal meningitis and septicemia treated by the Vincent serum, with 252 recoveries and fifty-eight deaths. This is a proportion of 81 per cent cures and a mortality of 18.70 per cent. The most favorable results were obtained in early cases. These have been cured in five or six days. In the later cases the interval has been from six to eleven days. As to results viewed in relation to the atrium of infection, septicemia originating in the throat or ear has resulted in 85.5 per cent recoveries. The cerebrospinal meningitis cases of otitic or traumatic origin have been followed by a smaller (64.55) percentage of recoveries.

Unusual Causes of Hemoptysis in Tuberculosis

At the February 7 meeting of the Société médicale des hôpitaux of Paris, in a paper by Ameuille and his associates, four cases were reported of fatal hemoptysis in pulmonary tuberculosis due to aneurysms of the interstitial vessels, with resultant formation of one or more hematomas in the parenchyma of the lung, surrounded by a shell-like capsule of fibrin. In all four cases the tuberculosis was of the ulceronodular type. In only one case was a denser irregular area on the roentgenogram, corresponding to the encapsulated hematoma, to be seen. Before searching for hematomas at necropsy, the authors advised placing the lung in solution of

formaldehyde for several days. Microscopic study revealed that the aneurysms were similar to those described by Rasmussen as occurring in the walls of cavities. In Ameuille's specimens, as in Rasmussen's, there were afferent and efferent vessels with development of a sac filled with fibrin between these vessels. As to etiology, Ameuille is of the opinion that a segmentary necrosis of a tuberculous character takes place in a vessel in contact with a pulmonary lesion. This either results in the formation of an interstitial aneurysm with repeated small hemoptyses followed by a sudden fatal one or the latter takes place without any prior bleeding. Such pulmonary lesions have not yet been described, according to Ameuille.

BERLIN

(From Our Regular Correspondent)

March 19, 1936.

Diphtheria Mortality and the Insurance Physician

Diphtheria, on account of the severe form in which it appears in Germany, is of particular concern to the pediatrician. Dr. Paschlau, staff member of a children's hospital, addressed the Berlin Pediatric Society on diphtheria. The question as to the efficacy of serum has been brought to the fore. It is to be remembered that in 1913 Professor Bingel of Brunswick, with a vast amount of data at his disposal, was unable to distinguish appreciable difference between the effect of antidiphtheric serum and that of similarly injected plain horse serum (without antibodies). Since that time the skeptical have questioned the specific efficacy of antidiphtheric serum. After the war, diphtheria assumed a new character in many parts of Europe. Laryngeal diphtheria became less frequent, and since 1926 clinics in Berlin, Vienna, Düsseldorf and elsewhere have reported a great increase in cases of so-called toxic disorders of the nasopharynx which, despite abundant usage of serum, have shown a mortality of 40 per cent or more. The amount of serum given has been increased; instead of from 200 to 500 antitoxic units per kilogram of body weight formerly employed, as much as 100,000 units came to be given and this dosage has been increased even to 800,000 units. Results from these massive doses are disappointing. Paschlau brought out that in these toxic states the antidiphtheric serum in large doses as well as in combination with antistreptococcus serum, blood transfusions, arsphenamine and in the form of symbiosis serum has been proved powerless. Paschlau next traced the decline in the value of serotherapy since the armistice, until now only on the first or second day of illness in toxic cases can even a modest degree of efficacy be anticipated. Few diphtheria patients, however, receive the serum at such an early stage. But if it became customary to administer serum at that early time, the mortality from diphtheria would be greatly decreased. Statistics from two large children's hospitals in Berlin present an interesting contrast. At the Emperor and Empress Frederick Children's Hospital in only 37.2 per cent of all diphtheria cases and 34.4 per cent of the toxic type cases were injections of serum administered during the first two days of illness, but at the Berlin Municipal Orphanage and Foster Home the corresponding figure was 80 per cent. Accordingly the mortality in the Children's hospital averages 13.3 per cent, while that of the orphanage is only 1.96 per cent. So great a difference can hardly be due to a lack of order in the records of the more serious cases; the later term of serum administration at the Frederick Hospital is rather to be considered the responsible factor. The difference between the general mortality for Berlin (8.9 per cent) and that of the orphanage inmates (1.96 per cent) cannot be explained otherwise than by the greater efficacy of early administered antidiphtheric serum.

After so much research and with so many data the efficacy of the serum must be regarded as a fact. Of course, great importance is attached to the time when the serum is given; the propitious period lies so early in the course of the disease that the majority of patients never receive it until too late. According to Paschlau's experiments it is unnecessary to inject in excess of 1,000 antitoxic units daily per kilogram of body weight. Repeated injections are highly recommended so long as the local manifestations appear to be progressing. Apparently an antidiphtheria campaign to be successful must effect an improvement in urban public health centers for the working classes, especially with regard to the medical service. Paschlau emphasizes that so long as the insurance physician is compelled to treat from 100 to 150 patients daily, diagnoses of diphtheria in its earlier stages will continue to be difficult; besides, the insurance physician must still encounter much official red tape on account of the high cost of serum.

Infection of School Children by a Tuberculous Teacher

In connection with the important topic of the infection of school children by a tuberculous teacher, Dr. Marx, an official district physician, has furnished a valuable report. After the death from pulmonary tuberculosis of a volksschule (elementary school) teacher, the children in all six grades of the school were given the Hamburger percutaneous tuberculin test. The results are given in the accompanying table.

Results of Hamburger Percutaneous Tuberculin Test

1. In the Deceased Teacher's Classroom			
Length of Time in Classroom	Number of Children	Positive	Negative
Six months	19	15	4
Two or more years	3	3	0
Five and one-half years	32	22	10
Totals	54	40	14
2. In the Remaining Classrooms (Under Other Teachers)			
Total Number of Children	Positive	Negative	
184	36	148	

The difference thus speaks for itself. Roentgen examination of the group of forty children showed twenty-four in whom no focal shadows indicative of tuberculosis could be detected (slight lime deposits in the hilus were not regarded as pathologic), two inactive types, three suggestive types, and active tuberculosis eleven. Among the children from the other classes who showed positive reactions (thirty-six) there were found only two presenting active tuberculosis, two showed suggestive and eight inactive types of the disease; the remainder showed no shadows of foci.

Naturally in several cases the existence of independent familial sources of infection had to be taken into account. However, careful examination permitted of no doubt that the deceased teacher had been the sole source of infection for a great majority of those children who showed positive reactions. The data in this case may be regarded as a valuable contribution to our knowledge of what may be expected from an actively tuberculous teacher. The most expedient indication seems to be diagnostic group examinations of teachers, and these have already been undertaken in the affected district.

Warning Against Public Recommendations of Medicaments

Time and again, for many years, responsible medical professional publications and organizations have sought means with which to curb the unauthorized (and hence naturally more favorable) recommendations and testimonials of medicaments by certain physicians. The propriety or efficacy of the many attempts heretofore made to deal with this problem is dubious enough (The Journal, Sept. 9, 1933, p. 866). It is therefore interesting to know that the Berlin Aerztekammer (Chamber of Physicians) has issued a public notice, which is official for

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physicians and which bears the superscription "Warning!" In this notice all physicians are urgently requested to exercise the greatest possible reserve in the matter of public recommendations. The Aerztekammer must recently have observed that these unseemly recommendations, so obligingly given, were often being exploited by manufacturers in a manner contrary to the intention of the physician in question. If such recommendations are used for lay advertising, then, according to decisions of the medical court of honor, the Aerztekammer must move that the physician be proceeded against as a violator of professional ethics. Only a short time ago the manufacturer of an aperient released "Confidential Information for Physicians." This man had obtained advice from various physicians which, according to the representation, was to be solely "for his own personal information" and which he subsequently caused to be printed. Hence the Aerztekammer urges that the practice of recommending medicaments be drastically curtailed or, better still, completely abandoned. This threatening admonition, it is hoped, may prove more effective than previous attempts to regulate this practice.

Congenital Dislocation of the Hip Joint

The Erlangen anatomist Professor Pratje, while studying the ossification of the pelvis, observed in several cases of congenital dislocation some remarkable variations. Changes occurring in the region of the ischia have indeed been recognized for quite a while. Development is clearly retarded at the time when the center of ossification first appears as well as in further course of growth. In cases of unilateral dislocation, the center of the afflicted side is almost always a third smaller; namely, it possesses on an average a diameter smaller by 5 mm. In cases of bilateral dislocation there is a correspondence between the two sides. The joint socket in children presenting diseases of the hip joint shows a further flatness, the upper portion remains steep and the rim of the socket is lacking. Thus at about the age of 2½ years the development corresponds to that of a normal infant aged 6 months. Following reduction of the dislocation, a normal socket can still be formed. In the second fusion of the bones, namely, the fusion of the pubis and the upper ramus of the ischium, a similar retardation of development may be detected. While normally it requires from four to five years for the bones to become fused, in some of the cases observed it took seven years and in one case as long as twelve years. An open symphysis presents itself between the ends, the length of which on the dislocated side is greater by many millimeters than the length on the normal side; in cases of bilateral dislocation the development of both sides is retarded. The center in the trochanter major appears much later on the diseased side and is always smaller than on the normal side; in bilateral disease this inferiority is equal. The normal development is temporarily retarded. Normal development is made possible by reduction. Whether it is a question of local retardation or of a retardation of the entire bodily development has not yet been finally decided. It is certain that these disorders are due to a hereditary embryonic defect, the power of which to transmit itself is rather slight. Pratje arrives at the following conception of the origin of congenital hip joint dislocation: Primarily it is a question of retardation of the normal course of development, not of a malformation due to arrest of development or to inherent deformity. As a result, at the time when function should begin, both joint socket and condyle are too flat and the socket rim is far too underdeveloped. Consequently the dislocation can be produced by a trauma or by normal functioning. If the dislocation is reduced early, the normal development, even if arrested, resumes its course; if, on the other hand, the dislocation persists, functional phenomena of a wholly different kind may result, such as disorders of the vascular supply; these in turn lead to further severe disturbances of the ossification and to pathologic states refractory to orthopedic and surgical intervention. The predisposition toward retarded development is inherited. The environment may strengthen or weaken the hereditary tendency. In this way the too flat socket originates. In undeveloped joints, function itself may lead to dislocation; in such cases hereditary predisposition and environment combine. Endogenous or exogenous causes act in unison, although the endogenous, the hereditary, predisposition may be considered as the primary cause.

Investigation of Nonhereditary Feeblemindedness

A study of the first eighty cases recorded in a genealogical table by the department of genetics of the Erfurt (Thuringia) municipal health bureau shows fifty-one patients who have attended the school for backward children. It could be demonstrated that 76.47 per cent of this group were afflicted with hereditary disease; a hereditary taint could not be proved in six cases, an exogenous injury was a factor in two cases, and neither exogenous nor endogenous injuries could be detected in four cases. On the basis of these observations the relative incidence of hereditary and nonhereditary feeblemindedness in early childhood was verified. The marked rarity of nonhereditary feeblemindedness was likewise demonstrated. Since the first school years are the most propitious for such examinations and offer the best criteria, seventy-two pupils of the school for backward children were made to fill out a special questionnaire and examination blank. The gathering of accurate data was hampered, since occasionally the mother or father was unknown. Despite this handicap, 236 brothers and sisters were established. Of this number alone 20.3 per cent attend school for backward children—in other words are mentally deficient. In all, 47.2 per cent of the seventy-two have tainted brothers and sisters, without including many borderline cases. Similarly, tainted parents, grandparents and so on are discovered in 52.8 per cent of the persons studied. This number is increased by about four when the entire tainted genealogy is considered. Therefore forty-two cases, or 58.33 per cent of the total, present histories of hereditary taint. By careful computation a maximum figure of sixty-four hereditary cases is arrived at against eight nonhereditary cases, a proportion of 88.8 per cent to 11.1 per cent.

BELGIUM

(From Our Regular Correspondent)

March 15, 1936.

International Congress on Occupational Diseases

The seventh Congress on Occupational Accidents and Diseases was held recently at Brussels under the presidency of Mr. Gilbert. The assembly was divided into two sections, one of which, presided over by Professor Langelez, dealt with occupational medicine while the other, dealing with accidents, was headed by Mr. François.

HEAD INJURIES

Of 100 patients presenting cranial injuries, fifty survive. Thirty-five of the survivors present sequels and fifteen are pronounced cured. These cases are scarcely stabilized in less than twelve months subsequent to the accident. They then enter that third period, which was the subject of the papers read. The term of one year, fixed as a point of departure, is doubtless arbitrary; however, it seems to constitute the most appropriate time from which to date this third period and study its evolution. Lippens stressed the difficulty of precise diagnosis and the necessity for thorough specialized examinations (ophthalmologic, cochleovestibular, neurologic, psychiatric, encephalographic, tensional and biologic). The measure of diastolic tension of the central retinal artery is an important but not pathognomonic factor in diagnosis. The pressure and modifica-

tions in the composition of the cerebrospinal fluid are not constants, yet they are of value. What appears to be the most reserved prognosis need not be the most unfavorable.

INJURIES OF THE HANDS

In addition to papers by Neuman and Böhler on the treatment of hand and finger injuries, Imbert submitted a study of lesions on the upper extremities in which he formulated two conclusions: 1. To the upper limbs, the fingers are everything; disturbances caused by an amputation of the fingers are almost as serious as an amputation of the arm. On the lower limbs, on the contrary, the seriousness of an amputation is increased the higher the level at which it takes place. Amputation of the toes is of minimal importance. 2. To the upper limbs a prosthesis is well nigh useless; to the lower limbs, on the contrary, even the most simple prosthesis may determine the patient's ability to resume work. This difference is due to the fact that in the upper limbs it is mobility that counts; in the lower limbs, solidity. As mobility is the essential quality of the fingers, their fixation in any one position, whether flexed or extended, is disastrous from a functional point of view. The thumb is the most useful, provided that at least one opponent muscle remains to it. This digit possesses a pathologic as well as a physiologic individuality. It stiffens less readily than the other digits and among them a simultaneously physiologic liaison, often a source of trouble, exists.

METHODS EMPLOYED IN COMBATING DUSTS

In evaluating any dust collecting apparatus the following factors must be taken into account: space occupied by the machine, efficiency, evacuation of the collected dust, temperature of the gas, expenditure of energy entailed, and the costs of installation and maintenance. There are three methods of eliminating dust and these correspond to three different types of apparatus, the dry, the wet and the electrical. Dust collectors of the "dry" type may be based on the use of sacks, on gravity or on centrifugation. Wet or wet-screen apparatus may depend on a descending stream of oil or of water. The principle of the electrical apparatus is ionization.

GASES THAT ESCAPE FROM FIRE DAMP VEINS

Mr. Brey of Liége reviewed the gases found in Belgian mines. He discussed those which are encountered accidentally (sulfuretted hydrogen, carbon monoxide, carbon dioxide) and outlined briefly how they may be detected. The principal gas emitted is commonly known as fire damp, which is composed of methane from 93 to 99 per cent, ethane less than 3 per cent, nitrogen, carbon dioxide, and hydrogen present only in traces if at all. For purposes of an anti-fire damp campaign, fire damp may be considered as pure methane. The most common device for the detection of fire damp is still the flaming safety lamp, but to be of service it must be in competent hands. Other apparatus for prompt detection of fire damp are the Léon-Montluçon grisoumeter, the Spiralarm Naylor grisoumeter, the Zeiss interferometer, the Daloz apparatus and the McLukie apparatus.

DIAGNOSIS OF PAIN IN TRAUMATISM

De Laet stated that pain itself is a disabling sequel or it participates to some degree in the disability proper. Therefore it should be evaluated with the greatest possible accuracy. He reviewed the signs to be considered in making complete clinical examination of the patient: possible simulation, papillary dilatation, the pulse rate, the arterial pressure, and the specific sign, fall of the urinary P_H, which he emphasized.

LESIONS DUE TO ELECTRICITY

Stassen of Liége said that "electrical traumas" are of two varieties: (*a*) "electrical shock," presenting the general phenomena of electrocution, and (*b*) local lesions, which have a characteristic appearance and must not be confused with ordinary burns caused by fire or chemicals. Any person suffering from electrical shock should be considered in a state of apparent death. Treatment therefore should be similar to that employed in cases of submersion. As with drowned persons the body may be white or blue; but, regardless of the type of discoloration, basic treatment consists of artificial respiration practiced over a period of hours. The treatment of injuries due to electricity should be above all "conservative." Immediate amputation of carbonized members is seldom indicated. One should await until a precise natural demarcation between healthy and carbonized tissue has taken place. Mobilization of the members should be effected as early as possible in order to conserve the maximum tonicity of the undamaged tissues and to render the cicatricial tissues as flexible as possible.

Occupational Diseases in Belgium

The Belgian law providing compensation for damages due to occupational diseases dates from 1927. In the *Bruxelles médical*, Dr. Langelez examines the results of this legislation. Up till 1934, only three diseases could be made the basis for such compensation. These were saturnism, hydrargyrism and anthrax. Since 1934 the following diseases have been added to the original list: intoxication from phosphorus and its compounds, from arsenic and its compounds, from carbon disulfide; from benzene—its homologues, their amines and nitro derivants, and from hydrocarbons of the fatty series and their chlorinated derivatives, pathologic disturbances due (1) to radium and other radioactive substances and (2) to roentgen rays, epitheliomas of the skin due to a handling of tar, pitch, bitumen, mineral oils, paraffin and all compounds or residues of these substances. Lead remains the most redoubtable of industrial poisons and saturnism the most truly classic of occupational diseases. Of a total of 436 cases in which indemnities were paid, 91 per cent have to do with saturnine intoxication. The two occupations in which the threat of saturnism looms largest are at present metal glazing and the manufacture of electrical accumulators. In seven years, twenty-seven cases of anthrax were recorded; the greatest number for any year was ten in 1929. Averages for the other years ranged from two to four cases. The most perilous industry from the standpoint of anthrax is the manufacture of gelatin: sixteen cases out of the twenty-seven were traceable to this activity. The manufacture of gelatin entails the utilization of bone fragments imported from foreign lands, particularly the Indies.

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Marriages

E. Ross Jenney, Los Angeles, to Miss Agnes Victoria Anderson of Oslo, Norway, in Santa Barbara, Calif., April 25.

William Dodd Anthony to Miss Mary Maitland Parham, both of Waycross, Ga., in Waco, Texas, February 27.

Charles Francis Leich, Evansville, Ind., to Miss Carroll Mabel Duncan of Indianapolis, April 25.

Samuel Mayer Dodek, Washington, D. C., to Miss Miriam Joyce Selker of Cleveland, April 13.

James Anthony McHugh to Miss Georgia Mary Ingalls, both of Stockton, Calif., April 1.

Irving J. Wolman, Philadelphia, to Miss Roslyn Carroll Stone of New York, April 12.

Seals S. Speer, Bay St. Louis, Miss., to Miss Alma Boyd of Converse, La., March 7.

Richard K. Frawley to Miss Alma Dustman Oakleaf, both of Titusville, Pa., April 25.

John Sumter Cunningham to Miss Phyllis Fenn, both of Hartford, Conn., recently.

Charles C. W. Judd to Miss Mary Evelyn Webb, both of Baltimore, recently.

Deaths

John Ridlon ● Newport, R. I., well known orthopedic surgeon, died, April 27, at the Newport Hospital, aged 83. Dr. Ridlon was born in Clarendon, Vt., Nov. 24, 1852. He received an A.B. degree in 1875 and an A.M. degree in 1878 from the University of Chicago, and his M.D. degree from the College of Physicians and Surgeons, Medical Department of Columbia College, New York, in the same year. Dr. Ridlon was an intern at St. Luke's Hospital, New York, from 1878 to 1880, and later attending orthopedic surgeon at the New York Orthopedic Dispensary and Hospital and instructor in orthopedic surgery at the New York University Medical School. He also had been a surgeon of the first orthopedic division of the outpatient department of Bellevue Hospital and assistant surgeon at the Vanderbilt Clinic, New York. From 1892 to 1898 he was professor of orthopedic surgery and head of the department at Northwestern University Medical School, Chicago, and held a similar professorship in the Chicago Post-Graduate Medical School from 1892 to 1893, the Northwestern Woman's Medical School from 1898 to 1912 and Rush Medical College, Chicago, from 1909 to 1912. During the World War he served in the Medical Reserve Corps of the Army, retiring as a lieutenant colonel in the auxiliary reserve.

JOHN RIDLON, M.D., 1852-1936

Dr. Ridlon was secretary of the Section on Orthopedic Surgery of the American Medical Association from 1912 to 1913 and a member of the House of Delegates from 1914 to 1922. He was past president and secretary of the American Orthopedic Association, honorary member of the British Orthopedic Association, a member of the Clinical Orthopedic Society and a fellow of the American College of Surgeons. He was an orthopedic surgeon at the Wesley and Presbyterian hospitals, Home for Destitute Crippled Children and the Home for Convalescent Children, all in Chicago, and the Home for the Friendless at Evanston, Ill. He was also orthopedic surgeon to the Mercy, Michael Reese and Evanston (Ill.) hospitals and the Newport (R. I.) Hospital, later becoming consulting orthopedic surgeon. Dr. Ridlon was a founder and a past president of the Home for Destitute Crippled Children, Chicago. He was awarded an honorary A.M. degree from Tufts College in 1899, and Sc.D. from the same college in 1926. He is said to have been the only living American orthopedic surgeon who knew Hugh Owen Thomas, and the first to adopt his methods. Dr. Ridlon was a kindly, genial man with a keen sense of humor and was a source of inspiration to all the younger men fortunate enough to be associated with him.

Albert Harrison Brundage, Woodhaven, N. Y.; University of the City of New York Medical Department, 1885; member of the Medical Society of the State of New York; fellow of the American College of Physicians; emeritus professor of toxicology and physiology, departments of medicine, dentistry and pharmacy, Marquette University, Milwaukee; president of the New York State Board of Pharmacy in 1903; member of the Volunteer Medical Service Corps during the World War; inspector of the board of health; from 1904 to 1921 toxicologist and later consulting toxicologist to the Bushwick Hospital; author of "A Manual of Toxicology" published in thirteen editions; contributed articles on pharmacy and various subjects to technical and other journals; aged 74; died, March 12, in the Central Islip (N. Y.) State Hospital, of pneumonia.

Brainerd Hunt Whitbeck ● New York; Columbia University College of Physicians and Surgeons, New York, 1903; professor of orthopedic surgery, University of Vermont College of Medicine, Burlington; member of the American Orthopedic Association; fellow of the American College of Surgeons; served during the World War; aged 58; attending orthopedic surgeon to the Neponsit Beach Hospital for Children, Rockaway Beach; consulting orthopedic surgeon to the Roosevelt Hospital, New York, Memorial Hospital, Canandaigua, Vassar Brothers Hospital, Poughkeepsie, Benedictine Hospital, Kingston, St. Luke's Hospital, Newburgh, and the Lawrence Hospital, Bronxville, where he died, February 29, of cerebral hemorrhage and arterial hypertension.

William Day Chapman ● Silvis, Ill.; Washington University School of Medicine, St. Louis, 1908; past president and secretary, and for many years councilor of the Illinois State Medical Society; past president and secretary of the Rock Island County Medical Society; member of the House of Delegates of the American Medical Association, 1933-1935; served during the World War; aged 52; died, March 16, of facial erysipelas.

John Edward Hall Atheleson, Chicago; Vanderbilt University School of Medicine, Nashville, Tenn., 1897; member of the Illinois State Medical Society; member of the Associated Anesthetists of the United States and Canada; aged 61; attending anesthetist to the Columbus, Lutheran Memorial and St. Mary of Nazareth hospitals and the Grant Hospital, where he died, March 1, of myocarditis, coronary sclerosis, uremia and gangrene of the right leg.

Isaac Walter Kite ● Surg., Lieut. Commander, U. S. Navy, retired, Washington, D. C.; Medical College of Virginia, Richmond, 1885; entered the navy in 1886 and retired in 1910 for incapacity resulting from an incident of service; served during the Spanish-American and World wars; aged 74; died, February 3, in the Naval Hospital, of carcinoma of the prostate.

John Neilson Reik, Pelham Manor, N. Y.; University of Maryland School of Medicine, Baltimore, 1900; fellow of the American College of Surgeons; served during the World War; formerly surgeon to the Baltimore Eye, Ear and Throat Hospital; aged 63; died, February 24, in the Mount Vernon (N. Y.) Hospital, of diabetes mellitus and cerebral thrombosis.

Seth Newland Thomas, Auburn, N. Y.; University of Buffalo School of Medicine, 1900; member of the Medical Society of the State of New York and the Associated Anesthetists of the United States and Canada; on the staffs of the Auburn City Hospital and the Mercy Hospital; aged 62; died, March 4, of cerebral hemorrhage. ●

Edwin M. Chauncey, Albion, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899; member of the Michigan State Medical Society; served during the World War; formerly member of the school board; aged 62; on the staff of the Sheldon Memorial Hospital, where he died, February 20, of pneumonia.

Eric Albert Crull, Fort Wayne, Ind.; Marion-Sims College of Medicine, St. Louis, 1897; served during the World War; at one time city health officer; a founder, medical director and superintendent of the Irene Byron Sanatorium; secretary of the staff of the Lutheran Hospital; aged 59; died, March 15, of cardiovascular disease.

Haroutoune Asadour Adrounie ● Hastings, Mich.; University of Illinois College of Medicine, Chicago, 1913; formerly secretary of the Barry County Medical Society; county coroner; on the staff of the Pennock Hospital; aged 53; died, February 28, in the University Hospital, Ann Arbor, of cirrhosis of the liver.

James Henry Colson ● Gainesville, Fla.; College of Physicians and Surgeons, Baltimore, 1896; past president of the Alachua County Medical Society; formerly member of the state legislature; superintendent of the Florida Farm Colony; aged 69; died suddenly, March 5, of organic heart disease.

Frank B. Thompson ● La Fayette, Ind.; Starling Medical College, Columbus, 1882; fellow of the American College of Surgeons; chief of the surgical staff of the La Fayette Home Hospital and surgical director of St. Elizabeth's Hospital; aged 79; died, February 1, of chronic myocarditis and arteriosclerosis.

John Henry Mountain, Middletown, Conn.; Jefferson Medical College of Philadelphia, 1896; member of the Connecticut State Medical Society; health officer of Middletown; formerly state senator; on the staff of the Middlesex Hospital; aged 66; died, March 6, in St. Raphael's Hospital, New Haven.

Harold Ball Disbrow ● Lakewood, N. J.; Johns Hopkins University School of Medicine, Baltimore, 1916; fellow of the American College of Surgeons; served during the World War; for many years on the staff of the Paul Kimball Hospital; aged 46; died, March 21, of cerebral hemorrhage.

Omar J. East, Reed City, Mich.; Detroit College of Medicine, 1899; member of the Michigan State Medical Society; health officer of Reed City; on the staff of the Reed City Hospital; aged 68; died, March 10, in the Blodgett Memorial Hospital, Grand Rapids, of meningitis.

Herman Fried ● New York; Eclectic Medical College of the City of New York, 1908; Long Island College Hospital, Brooklyn, 1909; associate radiologist at the Hospital for Joint Diseases and the Beth David Hospital; aged 53; died, March 6, of carcinoma of the stomach.

Chett McDonald ● Beverly Hills, Calif.; University Medical College of Kansas City, 1891; member of the Missouri State Medical Association; at one time coroner of Jackson County, Mo.; aged 71; died, February 13, of coronary sclerosis and arteriosclerosis.

Gertrude Mildred Johnson, Battle Creek, Mich.; American Medical Missionary College, Chicago, 1904; fellow of the American College of Physicians; for many years on the staff of the Battle Creek Sanitarium; aged 57; died, January 29, of lymphatic leukemia.

Paul Maximilian Karl Luck, Passaic, N. J.; University of the South Medical Department, Sewanee, Tenn., 1898; formerly member of the board of education; aged 60; on the staff of the Beth Israel Hospital, where he died, February 27, of pneumonia.

John Benjamin Dunn, St. Cloud, Minn.; Rush Medical College, Chicago, 1883; formerly county coroner and health officer of St. Cloud; at one time on the associate staff of the St. Cloud Hospital; aged 76; died, February 6, of carcinoma of the prostate.

Geoffrey Marshall Morris, Globe, Ariz.; Dalhousie University Faculty of Medicine, Halifax, N. S., Canada, 1928; formerly health officer of Sumner County, Tenn.; aged 34; died, February 25, in the Gila County Hospital, of pneumonia.

William Roderick Cullen, Mankato, Minn.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1879; aged 84; died, February 13, in St. Joseph's Hospital, of hypertensive cardiovascular disease and adenoma of the prostate.

Adolbert Henry Mambert, Kingston, N. Y.; Albany Medical College, 1878; member of the Medical Society of the State of New York; on the staff of the Kingston Hospital; aged 81; died, January 27, of chronic nephritis and myocarditis.

Charles Wilson Curlin, Fulton, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; member of the Kentucky State Medical Association; owner of the Curlin-Neill Hospital; aged 57; died, March 2, of angina pectoris.

John Albert Topper ● Surg., Lieut. Commander, U. S. Navy, Washington, D. C.; Jefferson Medical College of Philadelphia, 1904; entered the navy in 1921; aged 55; died, February 14, in the Naval Hospital, of adenocarcinoma.

William Sommerville Fullerton, St. Paul; Bellevue Hospital Medical College, New York, 1882; formerly secretary of the state board of medical examiners; aged 78; died, February 7, of heart disease and cerebral hemorrhage.

Amy Amanda Decker Holcomb, Mount Pleasant, Mich.; Hahnemann Medical College and Hospital, Chicago, 1895; aged 70; died, March 18, in the Glenside Hospital, Boston, of cerebral hemorrhage and arteriosclerosis.

Edward Louis Robbins ● Syracuse, N. Y.; Albany Medical College, 1914; on the staff of the Crouse-Irving Hospital; aged 47; died, January 2, of coronary thrombosis.

Donald Randolph McLennan, Mayo, Yukon Territories; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1897; aged 66; died, January 16.

Bureau of Investigation

ELORDA CREAMS

Another "Alice in Wonderland" Cosmetic

Because of the lack of any national control of claims made for cosmetics, the advertising agencies that prepare "copy" for their clients in the cosmetic field permit their copywriters' imagination to run riot. Each year sees certain cosmetic advertisements that would appear to be the apotheosis of fantastic foolishness.

We have become used to, and hardened against, the appealing claims made for face creams having as a base hormones from armadillos, turtles or ring-tailed monkeys. Creams that make one thin and creams that make one fat. Creams that are the result of years of "scientific research" by unnamed scientific researchers, creams that banish wrinkles, cares, worries and perhaps next the mortgage on the old homestead; creams that coax, if not the skin, at least a fancy price from milady's purse. But the end is not yet! A large display advertisement appearing in a magazine devoted to women's interests asserts that there is now on the market "The Most Astonishing Developments in Beauty Care Ever Offered to American Women." It appears from the advertisement that most American women past twenty suffer from chronic dryness of the skin and premature wrinkles, but, explains the advertiser hopefully, while the two conditions usually go hand in hand, "the removal of one would mean the removal of the other." But how can they be removed:

> "The answer lies in two amazing new creams, Elorda Creams, that are perfectly suited to performing this duty, Elorda Creams see to it that your skin gets plenty of stimulation (to coax the glands into producing more softening sebaceous oil) and plenty of external lubrication."

Should any question arise in the minds of those who can read an advertisement of this sort without a feeling of nausea as to just how the effects are going to be produced, the advertiser goes on to state:

> "And the almost incredible reason for the effectiveness of Elorda Creams is that *they are made with gold!*"

"Almost incredible" would appear to be the most conservative statement in the advertisement. To any rational being, it would appear quite incredible. Reading further, one is given to understand—if he knows enough—that "the gold in Elorda Creams is in a special scientific form—soft, smooth, pink in color. . . ." In other words, presumably colloidal gold is used and the modus operandi is still further elaborated thus:

> "Each microscopic drop of this gold possesses a negative electrical charge. On the other hand, dead cuticle, grime and other foreign matter in the skin has a positive charge. As ever, when positive meets negative, they attract . . . with the result that the gold carries the captured grime to the surface where it can easily be removed."

Nor is this all, for the Brownian movement common to colloidal solutions is called into action:

> "And because these atoms of liquid gold are in a state of constant agitation, they act on the skin as massaging and stimulating agents. Through their stimulating action, normal circulation is restored and the skin is completely revitalized."

In view of the fact that advertisements of this sort cost a great deal of money and that business concerns, even those which sell cosmetics, will not pay out money unless there is a large return to be expected, the thoughtful may well wonder whether science has not given the human race an undeserved compliment in classifying man as Homo sapiens. It is doubtless true that any reference to gold will immediately stimulate the imagination and the greater the ignorance of chemistry, pharmacology and dermatology the greater the amount of stimulation. It would be a gross understatement to say that there is not the remotest scientific basis for the incorporation of colloidal gold into face creams and it certainly would be no exaggeration to describe the advertisement of Elorda Creams as a particularly blatant example of cosmetic quackery.

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Correspondence

SEDIMENTATION RATE IN JUVENILE RHEUMATISM

To the Editor:—In an editorial on the sedimentation rate in juvenile rheumatism (THE JOURNAL, March 14, p. 925) the effect of anemia on this test is mentioned. It is also stated that the method of bringing the red cell count to normal before performing the test is too cumbersome for routine use. Payne and Schlesinger in their recent paper, which seems to be the basis of this editorial, say that there is an absence of any accurate method of making corrections for anemia.

It therefore seems important to call attention to the fact that a relatively easy and satisfactory method of correcting the sedimentation rate for the anemia factor was described in 1930 by Rourke and Ernstene (*J. Clin. Investigation* **8**:545 [June] 1930). This method involves the simple procedure of centrifugating the tube containing the blood so that the hematocrit may be determined. From a chart constructed experimentally by these investigators the sedimentation rate which the blood sample would have if it had an arbitrary normal hematocrit of 45 may be determined.

Experience with the sedimentation rate used as a routine test during the past four years at the House of the Good Samaritan has decidedly shown the importance of correcting for changes in the volume per cent of the red blood cells. Relatively slight degrees of anemia may considerably accelerate the sedimentation rate, and a slight degree of anemia has been found to be quite prevalent in patients with rheumatic fever. Thus, many apparently abnormal rates fall well within the normal zone after the hematocrit has been determined and a correction made.

Any method which fails to correct for this anemia factor is subject to grave errors and therefore is not to be relied on.

The method of evaluating the effect of anemia by the use of a curve such as that described by Payne and Schlesinger does not make an actual correction and is therefore less reliable than the method of Rourke and Ernstene. It also involves the additional procedure of making a red blood cell count that is less accurate and more difficult to determine than the hematocrit. Furthermore, unless the red blood cell count is made on the same sample of blood as the sedimentation rate there is still greater chance for error, since the relative blood cell volume is not constant.

BENEDICT F. MASSELL, M.D., Boston.

GARGLES

To the Editor:—I should like to say a few words about the gargle, which has of late come into disrepute, particularly since x-ray investigators have discredited it.

Snow and Stern (THE JOURNAL, Sept. 15, 1934, p. 831) conservatively suggest that the gargle does not reach the anterior fauces. Haase (*Klin. Wchnschr.* **14**:1244 [Aug. 31] 1935), using the same technic (the subject gargles with a thin barium sulfate suspension before the roentgenogram is made), concluded that the gargle reaches the palatine arch and the upper tonsillar pole but does not reach the tonsils themselves or the posterior pharyngeal wall. It would be well if conclusions such as the latter could be confined to their own locality. Unfortunately, reports emanating from Germany have a way of achieving international prominence, and our own 1935 Handbook of General Therapeutics has embodied Haase's article into a chapter further indicting the gargle.

It is not my purpose to extol the gargle so much as to criticize the ultrascientific methods employed in denouncing it. It does seem more practical to look directly into the throat than to take roentgenograms of the contrast medium. If any one will take the trouble of examining the throat of a subject who has just gargled with a thick suspension of bismuth subcarbonate, he will find that every part of the mouth and throat, including the tonsils, posterior pharynx and even the piriform recess, is coated. With the commotion that occurs during gargling, can anything less be expected?

JULIUS KAUNITZ, M.D., New York.

DISLOCATION OF THE KNEE JOINT

To the Editor:—In THE JOURNAL, April 11, page 1252, the authors state that "the records of many large hospitals fail to show a single case of a complete dislocation of the knee." This statement is not in accord with the literature. I reported in THE JOURNAL, Oct. 5, 1935, p. 1111, a case of complete dislocation of the knee with photographs of the x-ray films before and after reduction. It is of interest that, in comparing the roentgenogram of my case with that of the later case, one is a mirror image of the other; for in my report the right knee was involved, while in the latter the left knee was involved.

I am pleased to note that Conwell and Alldredge, the authors of the later case, also obtained excellent results, as did I in my case, by using the method of reduction and postreduction care as I described in my original article.

A. M. FICHMAN, M.D., Fort Wayne, Ind.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

MUSCLE CRAMPS

To the Editor:—A white man, aged 36, American, has been troubled with muscular cramps in the extensor muscles of the left thigh, in the toes, in the fingers and in the lower chest region. He first noticed them in 1917. Since that time they have not seemed to be getting any more severe, but the cramp in his left thigh is extremely severe whenever it does occur. He has never had any trouble with his right thigh. He experiences these cramps in his toes every night immediately following the removal of his shoes at bedtime but never has them at any other time. The cramps in his fingers usually come on at various times during the day and may be present in one or several fingers at the same time. He is a painter and repair man for high water towers, and he is greatly alarmed for fear that he might sometime have a disastrous fall because of these muscular cramps. His work is not steady and he states that he is troubled just as much when he is not working as he is when he is working hard. He believes that occupation does not seem to influence him in respect to his muscular cramps. He has been told that some one was cured by one hypodermic treatment. If you know of any such satisfactory treatment, I should like to be informed.

M.D., Nebraska.

ANSWER.—It may be a fair assumption that the patient does not have any detectable disease to account for muscle cramps over a period of twenty years; nevertheless, an attempt should be made to determine whether the muscle cramps are a manifestation of tetany. It seems quite obvious from the history that uremia, hyperventilation, and obstructive lesions of the proximal gastro-intestinal tract are absent. The correspondent should determine whether or not the Chvostek and Trousseau signs are negative. The blood calcium should be determined because of the slight possibility of hypoglycemia due to diminished parathyroid function. Since the patient is a painter, the possibility of chronic lead intoxication should be considered. If these investigations disclose nothing abnormal, the cramps may be considered of the common variety, which do not result from recognized disease. Hunter (*Internat. Clin.* **4**:109 [Dec.] 1932) gives an excellent description "Half awake in the morning, one lazily stretches out and is suddenly seized in one calf with a very painful cramp which lasts about a minute, during which the tendo achillis is powerfully contracted, drawing the fore part of the foot downward." The mechanism of these cramps has been presented by Marx (*California & West. Med.* **38**:96 [Feb.] 1933): "Muscle cramps are usually brought on by sudden, exaggerated or wrongly directed impulses when a

muscle action does not meet the anticipated amount of resistance or is not checked by the controlling antagonistic muscles, as is normally the case. After producing a maximum contraction the superfluous amount of muscle energy liberated by the disproportionate impulse is converted into a muscular spasm."

Muscle cramps occurring during sleep appear to arise in the same manner as do those which follow stretching except that the primary muscle contraction is an involuntary or sleep movement in the former instance and voluntary in the latter instance.

The treatment during the episode is the forced manual extention of the muscle involved by the cramp. If, for example, the muscles of the calf are involved, the foot should be forcibly dorsiflexed. Prevention of the episodes is usually simple: avoidance of unopposed muscular contraction, as during stretching or swimming in cold water by those having a predisposition to cramps. Individuals who suffer during the sleeping hours should be fitted with a special shoe or boot to prevent involuntary muscle contraction. In many instances such muscle cramps are relieved by the administration of dilute hydrochloric acid three times daily or one of the calcium salts, such as calcium gluconate, in amounts of 4 Gm. three times daily, or one of the acid bearing salts, such as ammonium chloride, which can be given in amounts as large as 3 Gm. daily three out of each five days. A smaller amount of ammonium chloride will doubtless suffice.

DEMENTIA PARALYTICA

To the Editor:—A man, about 40 years of age, whose condition has been diagnosed as syphilis of the central nervous system with incipient dementia paralytica, has been under my care for the past six months. This diagnosis is based on both neurologic and serologic examinations. He has received hyperthermy with intravenous typhoid. He also has had:

Potassium iodide, 10 minims (0.6 cc.) for three months, three times daily.
Tryparsamide, 0.3 Gm. for twenty doses.
Bismuth in oil, 0.025 Gm. for twenty doses.
Colloidal mercury, 2 grains (0.13 Gm.) for twenty doses.

At present the blood Wassermann reaction is 4 plus. The neurologic condition has shown no definite changes either for improvement or for progression. Mentally, however, the patient is more cheerful. Because he strenuously objects to a spinal puncture until his blood is negative, the cerebrospinal fluid has not been reexamined. I will appreciate any criticism you may make as to my method of treatment to date, and what help you can give me as to the future treatment of this patient. Kindly omit name.

M.D., West Virginia.

Answer.—The question does not state what psychiatric clinical manifestations the patient shows. Not all paretic patients are benefited even by hyperpyrexia, for the percentage of remissions is only from 30 to 40 per cent. One has the impression that the fever was not elevated sufficiently in the treatment given this patient.

It is suggested that a course of twelve bouts of hyperpyrexia, reaching 104 to 105 F. for at least four hours, be given. The interim treatment of heavy metals and tryparsamide is correct. It is suggested instead of typhoid vaccine that malaria be given.

NEVUS VASCULOSUS

To the Editor:—I have under my care a boy, aged 8 months, a perfectly normal and developed infant, who has a congenital "nevus vasculosus" or angioma on the right cheek. The growth begins at the angle of the lips and is approximately 3 by 4 cm. in size, of port wine color and somewhat elevated, the surface being studded with small nodules. He is now under the care of a competent radium specialist, who has given three treatments within a period of five months. The growth has not diminished in size but shows some blanching. The parents have been told that the radium emanations will "store up" in the baby's system and cause trouble in later years. Is there any clinical data to support that theory? What in your opinion is the most satisfactory treatment of the condition from a cosmetic standpoint? Please omit name and address.

M.D., New York.

Answer.—The radium treatment carried out in this case as described is probably the best thing to do to blanch the redness. For the elevated part of the lesion it would probably be desirable to freeze with carbon dioxide. After radium has been used, because of the obliteration of blood vessels that it causes, the skin is more sensitive to freezing with carbon dioxide and the treatment should be made about half as long as on untreated skin, say from five to seven seconds instead of from ten to fifteen. In the application of radium to the surface, as is done in this case, there is not the slightest danger of systemic effects from the storing up of emanations in the tissues. The only thing to guard against is overdoing the effect on the skin.

Radium or x-rays on the one hand, or carbon dioxide on the other give the best cosmetic results. Carbon dioxide is advantageous in elevated lesions. In flat lesions they cause some shrinking of the contour of the surface. Neither is entirely satisfactory in cosmetic results in port wine marks.

ANOREXIA IN A CHILD

To the Editor:—Dr. Boyd's article on growth brings to mind one of my most puzzling cases. A girl now nearly 3 years of age has had no appetite since birth. Always she has had to be fed and even then will hold food in her mouth for as long as half an hour before either swallowing or spitting it out. Almost daily her mother must punish her to get her to swallow. She likes to play with candy but makes no attempt to eat it. At birth she had a long head and a cleft palate, the latter being blamed by the surgeons and pediatricians who have seen her for her aversion to eating. An excellent repair of the cleft palate did not improve the condition at all. In addition to this, or because of it, there has been no growth of the long bones, particularly the humerus and femur. Otherwise she has seemed to develop normally. She is not thin or anemic. She is contented and quiet and she plays and talks normally; her mentality is apparently normal for her age. From this description can the type of this abnormal growth be diagnosed and is any treatment possible.

Harold C. Miller, M.D., Eglon, W. Va.

Answer.—It seems possible that there are two separate conditions here, though a single explanation can be given. The commonest cause of refusal of food or of holding it in the mouth for long periods before swallowing it or spitting it out does not lie in the child but in the handling of the child. Most such children respond quickly to change of environment, particularly if they are placed among other children in a hospital or a child-caring institute. It is to be emphasized too that the quantity of food a dwarf requires depends on size, not age.

On the other hand there is certainly here an anomaly of the palate and of the factor that causes growth of the long bones. Symmetrical retardation of growth with prolonged refusal of solid food occurs in some cases of the symptom complex known as renal rickets or dwarfism. There is then usually a greater or less degree of polyuria and polydipsia. The urine contains a trace of albumin, sometimes a few pus cells, sometimes granular casts. There may or may not be rachitic changes in the bones. Some of these cases are undoubtedly due to pituitary malfunction and probably would respond to the growth promoting factor were it obtainable. Improved appetite has been reported following the administration of thyroid but has been only temporary. Apert recommends a milk and vegetable diet with small doses of sodium citrate. Such treatment will depend on the finding of loss of kidney function and of change in mineral metabolism.

Finally the data supplied suggest an abnormal growth differential of the type of achondroplasia. A definite diagnosis cannot be made without more data than have been supplied.

HYDATIDIFORM MOLE WITH PERSISTENT BLEEDING

To the Editor:—A married woman, aged 23, has always been in perfect health, except for an allergic sinusitis and an irregular menstruation. She began menstruating at the age of 13 years. Menstruation was always irregular, sometimes with intervals of four or five months, but it was normal when it did come. The patient became pregnant in the fall of 1932. No menstruation occurred for four months, and then there was a miscarriage. No fetus was found, just a few pieces of a rather darkish, spongy placenta. These pieces were not closely observed. The patient became pregnant again in the fall of 1934. All signs and symptoms of developing pregnancy were observed. No flow or discharge took place until August 1935; then pain and flowing occurred. She was curetted with a dull curet and the gloved finger. Again no fetus was found. Peculiar looking pieces of after-birth were submitted to a pathologist, who pronounced the condition a benign hydatid mole. After eight weeks of uneventful recovery an Aschheim-Zondek urine test for pregnancy was done and it was negative. No menstruation, flow or discharge after the last miscarriage occurred for a little over three months, and then there was a rather profuse hemorrhage, which gradually subsided over a period of ten days. She is still in bed although not flowing. What shall I do?

M.D., California.

Answer.—Every woman who has expelled a hydatidiform mole or has had one removed should have an Aschheim-Zondek or a Friedman test of the urine performed once a month for the first six months after the mole has been removed. For the following six months the biologic tests should be performed every two months, and during the second year three more tests should be made. Although a chorionepithelioma may occur many years after a hydatid mole has been expelled, it is generally safe to discontinue the biologic tests after two years. If, however, irregular bleeding occurs, one of these urine tests should be performed without delay regardless of whether such bleeding occurs a few weeks or a few years after the removal of a hydatidiform mole. A positive Aschheim-Zondek or Friedman test weeks or months after the expulsion of a mole is indicative of a malignant change unless a new pregnancy has started. Hence, whenever a positive urine test is obtained, one should first be certain to rule out a new pregnancy. This may not be easy at first. Usually in the presence of a new pregnancy there is an amenorrhea, whereas when a chorionepithe-

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lioma is present there is irregular and often profuse bleeding. Since an abortion may occur early in a new pregnancy, all tissue expelled from the vagina should be carefully examined microscopically. If a positive Aschheim-Zondek or Friedman test is obtained after the expulsion of a hydatidiform mole, especially if there has been irregular bleeding, a curettement should be performed and the scrapings should be examined by an experienced pathologist. In addition, evidence of metastases of a chorionepithelioma should be sought in the vagina and in the lungs. A roentgenogram will help to determine the latter. In the present case another Aschheim-Zondek test should be made and a curettement performed without delay.

TRICHOMONAS INFECTION IN MALE

To the Editor:—I am treating a man who has a urethritis and also a prostatitis due to Trichomonas. A number of recent examinations made of the urine by a competent technician were positive, and I am confident that there is no doubt as to the diagnosis. There is a stricture about the middle of the urethra which I attribute to this infestation, owing to the fact that the patient gives a history of never having had any venereal infection. Also the prostate is enlarged and boggy and very tender. About one year ago the patient's wife had a severe and protracted vaginitis, which was due to Trichomonas infestation, but she has not shown any evidence of a return of the trouble. Please outline a treatment that I may use in this man's case that will enable me to relieve him of his trouble. Kindly omit name and address. M.D., West Virginia.

ANSWER.—Infection of the urethra in the male and of the prostate with Trichomonas is comparatively infrequent. The presence of Trichomonas in the urine is particularly difficult to establish. Although a number of cases have been reported in which Trichomonas was found in the secretion from the urethra and from the prostate, it is not at all common. Stricture of the male urethra as a result of Trichomonas is even more unusual, since as a rule the infection is of a superficial type.

The treatment of infections of the urethra and prostate with Trichomonas in the male should be much the same as with the ordinary type of infection; namely, prostatic massage with increasing vigor, two or three times a week, and Janet irrigations of the urethra. For the latter purpose solutions of potassium permanganate, 1:8,000, and acetic acid, 1:3,000, might be used on alternate days. Following massage, instillations in the deep urethra of mild protein silver 10 per cent or weak solutions of silver nitrate may be of benefit. Although it has no specific action, potassium iodide internally might also be given. Needless to say, intercourse should be interrupted during the period of infection of either husband or wife.

STAMMERING, BLINKING AND LEFT HANDEDNESS

To the Editor:—A boy, aged 6 years, of normal mental and physical condition, has suffered from stammering for the past two years. His natural tendency is toward left handedness, but he has been trained by his parents to use his right hand as much as possible. For the past year he has been developing a marked blinking of both eyes. Do these features point to a symptom complex of a neurotic type? Do they have any relationship to each other? Please omit name and town.

M.D., New York.

ANSWER.—Orton has found that many left handed individuals develop speech disturbances when they are forced to write with their right hands. He has developed an intricate theory of cerebral dominance which is not particularly intriguing, but the empirical observations have been confirmed.

It is suggested that the first step be to allow the boy to write as he wishes, with his left hand. The blinking of his eyes is a neurotic symptom and probably has no relation to his stammering, if the latter be due to the foregoing mechanism. Both the stammering and the blinking may be symptoms of a neurosis and if changing his writing to the right hand has no effect on stammering, the whole syndrome should be treated as due to a neurosis.

INDUSTRIAL HAZARD IN POLISHING COMPACTS

To the Editor:—I should appreciate any information you have available as to the substances used in polishing the chrome plate and enamel on compacts, or cosmetic containers. Is the inhalation of the dust arising from this process, coming from the polishing agents, chrome or enamel responsible for any constitutional disturbances? Please omit name.

M.D., New York.

ANSWER.—The thickness of chrome plating on metal compacts or metal cosmetic containers is so slight (about one-millionth inch) that polishing or buffing is ordinarily objectionable. Particularly is this true of the cheaper varieties of compacts. Chrome plating should yield so bright a finish as to make polishing or buffing unnecessary. When carried out, it is customary to use levigated white aluminum oxide. This is mixed with stearic acid, to give body to the compound. At times chrome plated objects are polished with a mixture of chromium oxide and stearic acid. Prior to chrome plating of compacts and most other objects, a preplating with nickel is carried out. This nickel plating calls for polishing, which commonly is done with unslaked lime, again mixed with stearic acid and possibly with Japanese wax. The highly polished surface of enamel or porcelain compacts is obtained not by wheel polishing but by fire polishing in a furnace. None of the substances used as polishes, or the dusts from the metal surfaces or from the polishing wheels, will cause any characteristic systemic occupational disease. When green chrome oxide is employed, "chrome holes" readily are produced. In nickel polishing, the calcium oxide may lead to irritation of the skin, eyes or throat. All dusts are harmful to some extent, so that in this work respiratory inflammation is a fair expectancy. Increased rates of pneumonia and tuberculosis long have been associated with the trade of polishing and buffing.

PERSISTENCE OF QUININE EFFECT

To the Editor:—A recent obstetric case raised a question in my mind as to whether a prolonged delay of quinine activity was possible. A patient of mine scheduled for delivery Dec. 22, 1934, was still "on deck" by December 29. Since she was growing tremendous in proportion to the expected growth, it was felt that induction of labor was indicated. Quinine sulfate, 2 grains (0.13 Gm.), was given her every half hour, following a castor oil cleansing. No immediate contractions were established and as the days went by an occasional spasm was felt but nothing to speak of. January 11, exactly two weeks after the attempted induction, the patient went into violent labor and labored for more than twelve hours with the pains only two or three minutes apart. Little progress was made, however, as the head had attained unusual proportions by this time and the mother had a small pelvic outlet to begin with. The baby was finally delivered with Kielland's traction forceps. The question that has for a long time puzzled me and that I wish clarified is this: Can it be possible that, after two weeks' delay, the quinine induction finally began to work? From my observations in previous cases I was well acquainted with the tumultuous and violent labors precipitated by this method, and I am certain that this case was one of that type.

M. F. STEIN, M.D., Chicago.

ANSWER.—Quinine does not stay in the system as long as two weeks, and one could hardly visualize a quinine "absent treatment."

DIFFERENTIAL DIAGNOSIS OF OBESITY

To the Editor:—In a child who has obesity either of the hypothyroid or the hypopituitary type, what tests can I use to determine which is the type? Are there any reliable tests to differ between the anterior and posterior lobe pituitary type? I should like an early reply as I wish to start treatment. Please omit name. M.D., New York.

ANSWER.—Except for determination of the basal metabolic rate in hyperthyroidism there are no established laboratory tests to distinguish between the alleged types of obesity to which reference is made. There have been many experimental approaches to this problem, most of which depend on testing the blood or urine for one of the hormones secreted by the anterior lobe of the pituitary gland. Until more certain and practical laboratory criteria are established, the differentiation will have to remain on a dubious clinical basis.

AMYOTROPHIC LATERAL SCLEROSIS

To the Editor:—I would appreciate knowing the latest form of treatment for amyotrophic lateral sclerosis.

CARL B. YOUNG, M.D., Houston, Texas.

To the Editor:—Please designate the latest therapeutic measures employed for amyotrophic lateral sclerosis. What are the etiologic factors known today in this disease? Please omit name and address.

M.D., Florida.

ANSWER.—Amyotrophic lateral sclerosis is probably a degenerative disease which attacks the anterior horn cells, particularly of the cervical enlargement, thus giving rise to atrophies in the upper extremities. It also involves the lateral tracts, causing spasticity and exaggerated reflexes in the lower extremities.

There has been no discovery of known value in the treatment of true amyotrophic lateral sclerosis. Strychnine in full doses may help to strengthen the weak muscles, but it also tends to aggravate the spasticity. Aminoacetic acid, which has sometimes proved helpful in muscular dystrophy, has been disappointing but may be worthy of trial. About 15 Gm. of this substance may be given two or three times a day.

There are no specific etiologic factors known for this disease; it must be remembered, however, that the symptom complex of amyotrophic lateral sclerosis may be caused by syphilis.

BACTERIOSTATIC ASTRINGENT PREPARATION

To the Editor:—For some time I have been prescribing the following:

℞	Magnesium sulfate	3 ounces
	Boric acid	3 ounces
	Aluminum ammonium sulfate	1 ounce
	Menthol	35 grains
	Mix.	

This I have prescribed for a vaginal douche, one or two teaspoonfuls to a quart of water. I have often prescribed it for a wet or dry dressing. I have prescribed it for tired, aching feet. Please advise if the formula has any antiseptic qualities, as I have obtained some wonderful results from it. What is in it that gives such good results? M.D., Georgia.

ANSWER.—The combination is bacteriostatic, though not disinfectant. Its efficiency is chiefly due to the astringency of the alum, accentuated by the production of exosmosis due to hypertonic magnesium sulfate solution. The menthol has, no doubt, a good deal to do with the immediate grateful cooling sensation resulting from this application.

SAFE ANALGESICS

To the Editor:—Is there a safe analgesic other than narcotic? I know that unpleasant sequelae have occurred after some of the barbiturates. Would you consider it wise to give these frequently for relief of pain? M.D., Pennsylvania.

ANSWER.—Cure of the cause of pain rather than frequent administration of any analgesic is the goal of therapy. A constant pain due to an incurable condition should be relieved by section or destruction (e. g., by alcohol) of the sensory nerve involved.

Acetylsalicylic acid is probably the safest and most generally useful analgesic. The action is enhanced by combination with a barbiturate, such as phenobarbital. If it produces excessive sweating, it may be combined with extract of hyoscyamus, as in this prescription:

℞	Extract of hyoscyamus	0.15 Gm.
	Phenobarbital	0.50 Gm.
	Acetylsalicylic acid	5.00 Gm.

M. Div. into fifteen capsules.
Labl: One every two to four hours as required.

DEXTROSE SOLUTION INTRAVENOUSLY

To the Editor:—In the intravenous injection of dextrose what is the best strength to use? In a country practice without laboratory facilities or distilled water would it be proper to administer the stronger solutions as supplied by pharmaceutical firms, say 25 per cent and 50 per cent? Please omit name. M.D., Pennsylvania.

ANSWER.—A 5 per cent solution of dextrose is the best strength to use, as it is approximately isotonic with the blood. If the patient is also in need of sodium chloride administration, it is best to employ a solution of 2.5 per cent dextrose and 0.425 per cent sodium chloride. Such solutions are readily obtainable on the market in convenient containers suitable for administration in domestic practice. The stronger solutions should not be used unless osmotherapeutic effects, such as those due to the hypertonicity of the solution, are aimed at. For description see New and Nonofficial Remedies.

ERGOTAMINE AND SCLERODERMA

To the Editor:—Can you tell me whether ergotamine has been employed to any extent in the treatment of scleroderma and whether any case reports have been published? I should also like to obtain information concerning the pharmacology of this drug and its use in other conditions, such as acrodynia. Please omit name. M.D., Ohio.

ANSWER.—No case reports on the use of ergotamine in scleroderma seem available. Ergotamine is an active principle of ergot, capable of exerting the effects characteristic of the drug, including the peripheral vascular effects, which may, among others, resemble those of acrodynia. It seems unlikely that ergotamine would be used in the therapy of this condition.

LIMBER NECK AND POLIOMYELITIS

To the Editor:—Your reply to a query regarding relationship of limber neck of fowls and poliomyelitis, in the March 21 issue of THE JOURNAL, is read with considerable interest. From personal study of forms of paralysis in fowls and swine I am very sure your answer is accurate. I do, however, presume to call your attention to the fact that poultry pathologists do not recognize the condition popularly termed "limber neck" as an entity. Rather it is a symptom manifested commonly in such conditions as emaciation due to intestinal worms and tuberculosis and in fowl typhoid, leukosis, range paralysis and perhaps other diseases in addition to botulism.

CHARLES MURRAY, Ames, Iowa.
Professor of veterinary research, Iowa State College of Agriculture and Mechanic Arts.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 23-25. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARIZONA: *Basic Science.* Tucson, June 16. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Medical (Regular).* Little Rock, May 12-13. Sec., State Medical Board of the Arkansas Medical Society, Dr. A. S. Buchanan, Prescott. *Medical (Eclectic).* Little Rock, May 12. Sec., Dr. Clarence H. Young, 207½ Main St., Little Rock.

CALIFORNIA: *Reciprocity.* San Francisco, May 13. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science.* New Haven, June 13. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven.

FLORIDA: Jacksonville, June 15-16. Sec., Dr. William M. Rowlett, P. O. Box 786, Tampa.

GEORGIA: Atlanta, June 10-11. Joint Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, June 23-26. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 16-18. Sec., Board of Medical Registration and Examination, Dr. William R. Davidson, Room 5 State House Annex, Indianapolis.

IOWA: Iowa City, June 2-4. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Topeka, June 16-17. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, 609 Broadway, Larned.

KENTUCKY: Louisville, June 10-12. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MARYLAND: *Medical (Regular).* Baltimore, June 16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, June 9-10. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MISSOURI: St. Louis, June 4-6. State Health Commissioner, Dr. E. T. McGaugh, State Capitol Bldg., Jefferson City.

NEBRASKA: Omaha, June 9-10. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW JERSEY: Trenton, June 16-17. Sec., Dr. Arthur W. Belting, 28 W. State St., Trenton.

NEW YORK: Albany, Buffalo, New York, and Syracuse, June 22-25. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 15. Sec., Dr. Ben J. Lawrence, 503 Professional Bldg., Raleigh.

OHIO: Columbus, June 16-19. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, June 10-11. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: Portland, June 16-18. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

SOUTH CAROLINA: Columbia, June 23. Sec., Dr. A. Earle Bonzer, 505 Saluda Ave., Columbia.

TEXAS: Austin, June 23-25. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, June 24. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 18-20. Sec., Dr. J. W. Preston, 2815 Franklin Rd., Roanoke.

WISCONSIN: *Basic Science.* Milwaukee, June 6. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, June 8. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. *Parts I and II.* June 22-24 and Sept. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral examination for Group A and B applicants* will be held in Kansas City, Mo., May 11-12. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Oral, clinical and pathological examination of all candidates will be held in Kansas City, Mo., May 11-12. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh. (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Kansas City, Mo., May 11 and New York, Sept. 26. *All applications and case reports must be filed sixty days before date of examination.* Asst. Sec., Dr. Thomas D. Allen, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Kansas City, Mo., May 12. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PEDIATRICS: Albany, N. Y., June 10, Baltimore and Cincinnati in November. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF UROLOGY: Boston, May 22-24. Sec., Dr Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Missouri Reciprocity Report

Dr. E. T. McGaugh, State Health Commissioner, reports 8 physicians licensed by reciprocity at the meeting held in Jefferson City, Jan. 6, 1936. The following schools were represented:

LICENSED BY RECIPROCITY		
School	Year Grad.	Reciprocity with
Loyola University School of Medicine	(1919)	Illinois
State University of Iowa College of Medicine	(1934)	Iowa
University of Kansas School of Medicine	(1930)	Ohio
Louisville and Hospital Medical College	(1908)	Kentucky

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University of Louisville Medical Department	(1905)	Kentucky
St. Louis University School of Medicine	(1932)	New York
Washington University School of Medicine	(1934)	Illinois
Creighton University School of Medicine	(1932)	New Jersey

Colorado January Report

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the practical examination given in Denver, Jan. 7, 1936. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. Six physicians were licensed by endorsement. The following schools were represented:

PASSED	Per Cent
Osteopath*	85

LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Rush Medical College (1921) Illinois	(1915)	Michigan,
State University of Iowa College of Medicine	(1934)	Iowa
University of Louisville School of Medicine	(1932)	Kentucky
University of Oklahoma School of Medicine	(1931)	Oklahoma
Jefferson Medical College of Philadelphia	(1900)	Indiana

* Licensed to practice medicine and surgery.

Book Notices

Otosclerosis. By Louis K. Guggenheim, M.D., F.A.C.S., Assistant Professor of Clinical Oto-Laryngology, Washington University School of Medicine. Cloth. Price, $6. Pp. 312, with 127 illustrations. St. Louis: Louis K. Guggenheim, 1935.

The subject of otosclerosis continues to intrigue the interest of the otologist and of others as well who are concerned with the problems of the deafened. It is a disease particularly of the young and those in early adult life. The female at puberty and in the child bearing years is one common type of victim whose plight arouses the sympathy of those about her. Though it seldom leads to absolute deafness there is frequently enough impairment to interfere seriously with the happiness of the affected individual in social and industrial contacts. It is by no means a rare disease. Shambaugh and his associates in a study of deafness in members of the League for the Hard of Hearing estimate that 70 per cent suffered from otosclerosis with primary stapes fixation. The American Otological Society has been a leading force in this country in a campaign to solve the problems of this affliction. It has collected funds, established a permanent records bureau, and financially aided investigations at various universities. As to etiology there is at present no agreement. One recent textbook mentions no less than ten different theories, and while some of these are not mutually exclusive they vary widely enough. For instance, rickets is thought by some to be a cause. Still others, while not admitting the rickets theory, think that it is due to a disturbance of calcium metabolism. Others feel that it is closely akin to osteitis fibrosa, still others that it is closely related to Paget's disease. Wittmaack is a prominent exponent of the notion that it is due to labyrinthine congestion, and there are those who feel that the real cause is a fundamental underlying disturbance of the glands of internal secretion. It has been thought for a long time that, whatever the cause, a hereditary factor is present.

The author has taken for his thesis the idea that otosclerosis is hereditary and is a regression. His studies lead him to believe that the changes in otosclerosis manifest at puberty or later do not arise at this time but are due to changes in anlages presented early in the embryologic history of the man. He believes furthermore that the condition is a throwback, so to speak, to ancestors of the human race far down the line of vertebral descent. He has devoted much time and thought to his thesis. Starting far back he undertakes a phylogenic study of the labyrinth, beginning with the Cyclostomata. He then discusses the development of the human aural capsule from the earliest embryologic times. He has been fortunate enough to obtain a six weeks embryo the mother of which suffered from a classic form of otosclerosis. The sections obtained from the embryo are described in detail and present conditions that are highly suggestive. It is the author's belief that otosclerosis is perhaps due to a throwback to ancestral forms in which the labyrinth contains no windows, oval or round. In those human beings containing certain genes there is an attempt on the part of nature to reproduce the primitive labyrinthine type. His argument is bolstered by the fact that in most instances of otosclerosis the chief areas of activity seem to be in the region of the labyrinth windows, particularly the oval one, in which rests the foot plate of the stapes. While few will admit that the author has proved his point beyond all shadow of a doubt, it may be said that an ingenious and daring attempt at explanation has been made. The book gives evidence of much thought and reading. The arguments are well marshaled. The prevailing theories are presented with an interesting appraisal of each. The reproductions of photomicrographs are unusually well done, and those interested in otosclerosis will derive much information, pleasure and stimulation from a reading of this work.

The Source of Infection in Puerperal Fever due to Haemolytic Streptococci. By Dora C. Colebrook. Medical Research Council, Special Report Series, No. 205. Paper. Price, 1s. 6d. Pp. 99. London: His Majesty's Stationery Office, 1935.

Puerperal sepsis remains a principal cause of maternal mortality despite the present general knowledge concerning antisepsis and asepsis and the use of improved technical methods. Although extensive epidemics of puerperal fever now occur infrequently, the sources and types of infection in sporadic cases are of deep interest and require careful study.

The hemolytic streptococcus has long been considered the chief etiologic agent of puerperal sepsis, the incidence varying from 25 to 90 per cent. Only in the past few years have different groups and subgroups of hemolytic cocci been isolated and recognition been taken of the fact that some members are not pathogenic for man. Thus the hemolytic streptococci that might be found in the genital tracts of normal parturient women may be entirely harmless and could not be considered the cause of puerperal sepsis.

Dr. Colebrook seeks to determine the source of infection in a large series of cases of puerperal fever due to hemolytic streptococci and carefully summarizes her observations, determinations and conclusions, drawn from her three year study. She compares the strains of hemolytic streptococci isolated from cases of puerperal fever and the extragenital strains found in the patients and their contacts. The strains were identified by three methods of bacteriologic technic. The improved procedures are described. It was satisfactorily shown that the method of absorption of agglutinins can be relied on for the differentiation of stable serologic types of hemolytic streptococci involved in puerperal infection.

In a series of 121 puerperal strains isolated from cases of definite infection, it was found that eighty-five reacted with one or another of eighteen of the serums, that 85 per cent of these eighty-five strains belong to one of eleven types, and that 54 per cent belong to one of five types. Thus the majority of puerperal strains belong to a limited number of types, and these are the types usually found in diseases of the respiratory passages.

The source of infection of sixty-seven patients was investigated. A possible source was found in 76 per cent. Combined serologic and epidemiologic evidence pointed to the sources in these forty-eight patients. Six patients contracted their infection from their own extragenital strain, twenty-four from an attendant contact, and nine from a strain found in a member of the household. Any of the three sources could have been the cause in the remaining nine cases. In a review of other work Dr. Colebrook states that an extragenital source was found in the patient or contact in 75 per cent of 197 consecutive patients having puerperal fever.

The results of recent research show that the hemolytic streptococcus responsible for puerperal infection can be differentiated from other hemolytic streptococci by serologic and biochemical tests, that the organisms which cause puerperal fever are not found in the genital tract at the beginning of labor, and that the most important sources of such organisms are in the respiratory passages and in septic foci of the patient and her contacts. Acceptance of the facts, so ably presented in Dr. Colebrook's book, will do much in reducing the too high incidence of puerperal infection.

Haemochromatosis. By J. H. Sheldon, M.D., F.R.C.P., Hon. Physician to the Royal Hospital, Wolverhampton. Cloth. Price, $8.50. Pp. 382, with 40 illustrations. New York & London: Oxford University Press, 1935.

The material in this monograph formed the basis of the Bradshaw Lectures of 1934. In its present form it is not only a complete summary of the subject of hemochromatosis up to 1934 but is a well organized and carefully edited dissertation that should have permanent value as a text. Unlike most summaries the author has taken the privilege of indicating his own judgment on numerous conflicting issues and has offered a hypothesis that throws some light on the phenomena of hemochromatosis. The material is presented in a readable style. It is comprehensive yet simple and concise and reflects the author's intimate knowledge of the subject. A well selected bibliography of close to 600 references has been skilfully utilized in the organization of the text, and the discussions are convincingly illustrated. The view advanced by the author is that hemochromatosis should be classed as an inborn error of metabolism which concerns the inner metabolism of probably all the cells of the body (with the possible exception of the nervous tissue). The disturbance is expressed in two ways: by a disturbance in the metabolism of melanin (hemofuscin) and by the formation of iron-containing pigment (hemosiderin) in nearly all the tissues. Neither appears to be peculiar to the disease. The exact nature of the metabolic error is unknown but the author envisages two possible methods of approach, which he modestly discusses in detail. While this phase of the material is no more than legitimate speculation, it is provocative and logical. The monograph is of interest not only to those specifically interested in the subject of hemochromatosis but to any one concerned with the cellular metabolism of metallic constituents. The book is a valuable addition to any medical library and should be of mutual interest to the clinician and the pathologist.

Gelinnervuitende Stoffe der Gewebe. Von J. H. Gaddum, Prof. der Pharmakologie am University College, London. Eingeleitet von H. H. Dale, Direktor des National Institute for Medical Research, London. Monographien zur Pharmakologie und experimentellen Therapie. Herausgegeben von Phillip Ellinger. Paper. Price, 18 marks. Pp. 200. Leipzig: Georg Thieme, 1936.

More and more it is coming to be believed that stimulation of nerves and muscle is accomplished by secretions exuded by the endings of nerves. In an illuminating introductory chapter in Professor Gaddum's book Sir Henry Dale states: "The evidence is clear that whenever an impulse passes from an autonomic fiber to the cell of an autonomic ganglion, acetylcholine is liberated at the synapse. The conception is this: that acetylcholine acts as the carrier of each separate preganglionic stimulation, that it stimulates the ganglion cell and thus provokes a single postganglionic stimulation; then that at once it disappears. The same conception applies with even greater force to the transmission of impulses from the somatic motor fibers to the end plates in striated voluntary muscle. Here again acetylcholine comes into play. The proof in the case of the muscle is not so conclusive as is that for transmission through the synapses of the ganglions; nevertheless, such proof is accumulating rapidly." This topic is of such importance that Professor Gaddum finds it necessary to devote an entire chapter to it with attention not only to acetylcholine but also to sympathin. The evidence at hand makes it appear that sympathin is closely related chemically to epinephrine. In the preface of the book, acknowledgment is made for the inspiration received from Sir Henry Dale, with whom Professor Gaddum has been associated for several years and who originally was to have been a joint author. In accordance with the purposes of the series of monographs of which this is a member, the evidence selected for discussion is that to which the judgment of the author attributes the greatest interest and importance.

The principal topics reviewed in the volume are histamine, acetylcholine, adenosine, materials of unknown chemical constitution present in extracts of various tissues, the liberation of specific substances by stimulation of nerves, and the liberation of active substances in other tissues. The last topic introduces the concluding section, which bears on traumatic shock and the symptom complex of anaphylaxis.

The presentation of each topic is concise and orderly, somewhat after the manner of a compendium but with better style than the usual compendium has to offer, a style distinctly superior to that encountered in most German medical writing; thus only small familiarity with German is required by the reader. The subject of histamine, for instance, is covered in the following order: (*a*) its chemical and physical properties, (*b*) its pharmacologic peculiarities, its action on the circulation, on the lymph, on the heart, uterus and other organs, (*c*) its natural occurrence, its extraction and isolation, (*d*) its resorption, excretion and metabolism, (*e*) its physiologic significance.

The bibliography includes approximately 800 references, almost all of them mentioned in the text. The book is a welcome addition to the literature on pharmacology.

The Extra Pharmacopoeia of Martindale and Westcott. Volume II. Published by Direction of the Council of the Pharmaceutical Society of Great Britain. Twentieth edition. Cloth. Price, 25s 6d. Pp. 889. London: The Pharmaceutical Press; H. K. Lewis & Co., Ltd., 1935.

To call a book a gold mine may be unfair to the book, when it is as full of priceless information as is the "Extra Pharmacopeia," a book that is "intended to reduce to order and to a manageable compass references to the outstanding original work and the notable advances throughout the whole field of therapeutics." The first volume of this edition is devoted mainly to treatment with drugs and chemicals, and the second volume is concerned with matters of diagnosis, analysis and assay of medicinal products and diverse other subjects associated with medicine, chemistry and pharmacy that could not be included in the first volume. The first 300 pages gives a wealth of analytic data of interest largely to pharmaceutic chemists. Then follows a brief practical treatise on clinical examinations of urine, blood, feces, stomach contents and cerebrospinal fluid. Under nutrition are discussed foods, vitamins and their estimation, water, milk, flour and bread analysis. Bacteriologic and clinical data with special reference to diseases occupy 120 closely printed pages of practical information, some of which it would be difficult to find elsewhere. Sterilization and disinfectants, chemotherapy and gas poisoning, radium and roentgen diagnosis and therapy, electrotherapy, actinotherapy and proprietary medicines are chapter headings that might serve to illustrate the great variety of material taken up in this volume. The two volumes of the Extra Pharmacopeia constitute a reference library on matters medical and pharmaceutic that writers, teachers and practitioners who want to be well informed should not try to get along without.

Allgemeine Röntgenkunde: Einführung in Studium und Praxis der medizinischen Röntgenologie. Von Dr. H. Glasscheib. Second edition of "Die Röntgenforschung in Diagnostik und Therapie." Paper. Price, 18 marks. Pp. 502, with 304 illustrations. Vienna: Julius Springer, 1936.

When the first edition of Glasscheib's book came out, it had a phenomenal success, which was fully justified. For the first time an attempt had been made to give the fundamentals for the understanding of x-ray work from a diagnostic as well as a therapeutic point of view. The success of the book encouraged the author, when finishing the new edition, to widen the scope of the work. Glasscheib now gives his book the title "General Roentgenology." In fact, he has created a work corresponding to the textbooks of general surgery or pathology that have existed for a long time. With his book he provides a work which every physician who devotes himself to clinical x-ray work can use to advantage. The so-called interpretation of x-ray films can be successful only when the manner in which the films are taken is understood and the possibilities of interpretation in relationship to technic and clinical factors are balanced. The biologic fundamentals of the x-rays in living material are set forth and the physics of x-rays is converted from a rather dry and for the practitioner somewhat distant science into an interesting, living aspect of teaching. The material is abundant and it is astonishing with what disposition and exactness Glasscheib has solved his complicated task. The work is subdivided into three parts: (1) roentgen physics, (2) the use of x-rays in diagnostics, (3) the use of x-rays in therapeutics. Each of these parts is subdivided into numerous chapters. The partitions of the whole thing are so clear, the diction so distinct, that one is forced to admire the knowledge and the talent that this young author has submitted for the purpose of teaching. In this edition, the chapters concerning x-rays in

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the medical and clinical methods as well as special x-ray pathology are entirely new. Till now, parts of these chapters have been found scattered in special works. Here for the first time they are described exactly and clearly arranged.

The Foot. By Norman C. Lake, M.D., M.S., D.S., Senior Surgeon and Lecturer on Surgery, Charing Cross Hospital, London. Cloth. Price, $4.50. Pp. 330, with 95 illustrations. Baltimore: William Wood & Company, 1935.

This is written by a physician whose interest in the physiology and the pathology of the human foot is manifested in the enthusiastic presentation of the subject. The discussion begins with a review of the evolution of the foot and continues with a description of the anatomy and physiology. The author does not agree with Keith or with most orthopedic surgeons, who hold that the normal arch of the foot is maintained by muscles, while ligaments serve as safeguards and come into use only when the muscular defense is broken down. Lake further argues that the human foot has gradually been growing more rigid through the process of evolution. He explains in part some of the developmental anomalies and particularly the common condition of painful flatfoot or chronic foot strain by further interpretations of this hypothesis. The book includes a brief statement about the various abnormalities of the foot, injuries and infections, and covers subjects which are ordinarily relegated to the chiropodist but which should be better understood by the specialist and the family doctor. The text is illustrated by diagrammatic sketches, roentgenograms and reproductions of photographs. The general practitioner as well as the orthopedic surgeon is constantly being appealed to for relief from painful conditions of the feet. This book contains information which should help them in treating these patients more intelligently and more scientifically. The major orthopedic procedures connected with the treatment of severe talipes were deliberately omitted. This book should be of interest and help to the chiropodist and the masseuse as well as to the physician.

I and He: A Study of the Self. By E. Graham Howe, M.B., B.S., D.P.M., Associate Physician, Institute of Medical Psychology, London. Cloth. Price, 7s. 6d. Pp. 258, with 14 illustrations. London: Faber and Faber, Limited, 1935.

The author applies the principle of relativity to the study of life in general and of man in particular, decrying the fallacy of studying things-in-themselves and different qualities as absolutes. He points out that the scientist must recognize an inevitable dualism at every point. For instance, "where fear and anxiety are part of the reality of life, the sense of safety is only to be found in accepting danger" and "if we use our will power we soon discover something else, namely, that we have a won't power too." The author pleads for science as a method of correlating data obtained from the study of external reality, saying yes to both good and bad, yes to both sides of the balance, accepting the whole of reality as a matter of fact. The book is a philosophical study that will appeal more on a second reading than it will on the first, and the author's skilfully drawn paradoxes are aided by a number of formalistic drawings emphasizing the importance of the middle path and the falsity of fixed absolutes.

Thérapeutique cardiovasculaire. Par le Docteur P. Schrumpf-Pierron. Paper. Price, 30 francs. Pp. 296. Paris: J. Peyronnet & Cie, 1935.

The writer of this book is obviously not imbued with the critical scientific spirit that must be demanded of a medical teacher or writer in order that his opinion may carry weight. He obviously assumes the attitude of the so-called eclectic, who presumes to make a selection of remedies from "allopathic" as well as "homeopathic" and other authorities, and to use what seems best according to his judgment and experience. While Dr. Schrumpf-Pierron frequently indulges himself in flings at "regular" medicine, he does not impress one with any special knowledge of his "irregular" remedies, which he deals us with unfortunately so liberal a hand that it would take many a lifetime of many a man to judge them scientifically. This book certainly cannot be recommended as a safe guide to a beginner in therapy. It is rather suitable as a museum piece of "eclectic" medication.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Compensability of Pneumonia.—The employee, in the course of his employment, assisted for about two and one-half hours in the grinding of an exceptionally dirty load of grain fodder. The inhalation of the resulting dust and other foreign particles caused him to cough violently and to expectorate "a black substance." That evening he continued to cough, complained of his chest hurting, and expectorated blood. After several days of illness, he died of pneumonia. After the industrial accident board had denied their claim for compensation, the district court gave judgment for the claimants. The employer's insurer then appealed to the court of civil appeals, Texas.

Plainly, said the court, a damage to the physical structure of the body need not necessarily be externally visible to come within the meaning of "injury" as that term is used in the workmen's compensation act. Naturally, symptoms are depended on in large measure in cases of this character to prove injury to a hidden organ. There was violent coughing, spitting of blood, and pains in his chest, almost immediately after the infliction of the alleged injury, and these facts, together with the medical testimony, amply supported the jury's finding that an injury was sustained. If that injury was undesigned and unexpected, had its "origin in a risk connected with the employment," and is shown to have flowed immediately and directly from that source as a rational consequence, it is compensable. In this case the employee labored under unusual conditions. The fodder was the dirtiest that the witnesses had ever seen. There was a mild epidemic of pneumonia in the community. The employer could have but had not provided protective measures. The injury was unexpected and undesigned. It could be traced to a definite time, place and cause. There must, of course, be a causal connection between the injury and subsequent death of the employee for the latter to be compensable. Here, the court said, there was sufficient evidence of an injury to the lungs, followed immediately by symptoms indicating a predisposition to pneumonia, which in fact resulted, death occurring therefrom in just one week from the time of the alleged injury. The cause set in motion operated continuously through a sequence of events, each flowing naturally from one to the other, eventuating in death. The court therefore affirmed the judgment of the district court for the claimants.—*Maryland Casualty Co. v. Rogers (Texas), 86 S. W. (2d) 867.*

Malpractice: Fibrous Union Following Fracture of Hip.—The plaintiff, 59 years of age, injured his right hip in 1931, and the defendant, a physician, on the basis of a roentgenogram, made a diagnosis of an impacted complete fracture of the surgical neck of the femur. The injured leg was temporarily immobilized with splints and sandbags, and after the swelling had subsided a plaster cast was applied. About five months thereafter the cast and splints were removed. Continuing to have trouble with the hip for several years, the plaintiff consulted another physician in 1933, whose roentgenologic examination disclosed that the shaft had slipped past the head of the femur for a distance of about two inches, resulting in only a fibrous union. The plaintiff thereafter sued the defendant and obtained judgment in the United States district court, district of Idaho, eastern division. The defendant then appealed to the United States circuit court of appeals, ninth circuit.

It was conceded, apparently, that the defendant's initial treatment was proper for an impacted fracture, but it was contended that he was negligent in his diagnosis and was further negligent in not having taken a second roentgenogram in order to ascertain whether or not the bones were in apposition after the cast was applied. Five medical witnesses testified that the first roentgenogram showed the fracture to be impacted. One medical

witness for the plaintiff testified that, on the basis of the first roentgenogram and the plaintiff's inability to stand on the injured leg, the fracture was unimpacted and that the defective union was due partly to a failure to reduce the fracture by traction and partly to the premature use of the injured leg. Another witness for the plaintiff testified that the defective union might have been caused by either a failure to reduce the fracture or a slipping of the fragments after a proper reduction. The defendant testified that he did not take a second roentgenogram because his measurements showed the bones were in position at the time he placed the patient in the cast and that he made such additional examination and manipulation at that time as was necessary to ascertain that fact. There was no evidence that physicians in that locality were in the habit of taking more than one roentgenogram in a fracture case such as the one involved in this case, or of making any examination other than such as was made by the defendant. The treatment given the patient before the leg was placed in a cast was in accordance with the diagnosis and conceded to be correct for an impacted fracture. If, the court said, a physician has the knowledge and professional skill equal to the average in the locality where he is practicing and exercises that knowledge without negligence, he is not liable for a mistake or error in judgment. Said the court:

> In view of the opinion of the large number of professional witnesses to the effect that this was unquestionably an impacted fracture and was so shown by the x-ray pictures taken at the time, and in view of the fact that the opposing testimony of Dr. Rich merely goes to the expression of his opinion that the fracture was unimpacted and does not purport to show that there was negligence in diagnosing the fracture as an impacted one even if we assume, as the jury may have believed and found, that the fracture was not reduced, it would still be true that we have nothing more in the case than an error of judgment and no proof that the appellant did not exercise such professional skill and care as were reasonably to be expected in that locality.

The court concluded, therefore, that the plaintiff could not recover, having failed to establish that there was negligence in the initial treatment of the fractured leg and having failed to establish that the faulty union complained of was the result of any other act of negligence on the part of the defendant.—*Moore v. Tremelling, 78 F. (2d) 821.*

Pharmacists: Liability for Sale of Mineral Oil Contaminated with Formaldehyde.—The plaintiff purchased some mineral oil from the drug store owned by the pharmacist-defendant and gave a portion of it to his infant child. The infant became ill almost immediately and ten days later died of ileocolitis or inflammation of the bowel. The plaintiff, as administrator of the estate of his deceased son, sued the pharmacist-defendant and the clerk who had dispensed the oil, contending that the oil was contaminated with formaldehyde. At the close of the evidence, the case was dismissed as to the clerk, but the jury returned a verdict against the pharmacist, who thereupon appealed to the Supreme Court of Minnesota.

In the opinion of the Supreme Court, there was sufficient evidence to justify an inference that some one connected with the pharmacy had carelessly permitted formaldehyde to get into the mineral oil, that a quantity of it was sold to the plaintiff and administered to the child, and that the child died as the result thereof. The pharmacist contended, however, that the judgment in favor of the clerk was a conclusive bar to a judgment against him, arguing that the liability of the master is derivative and depends solely on the negligence of the servant. With this contention the court could not agree. Whatever might be the result if the pharmacist's liability depended solely on the act of his clerk, the court said, there was abundant evidence of responsibility aside from the sole act of sale. The real cause of death lay in the carelessness which resulted in formaldehyde being mixed with the oil. The record was silent as to how this occurred and certainly does not fix the blame on the clerk. Furthermore, Mason's Minn. St. 1927, Sec. 5813, provides that—

> Every proprietor or manager of a place where drugs are sold shall be responsible for the quality of all drugs, chemicals, and medicines sold by him.

This section was not enacted to relieve pharmacists of any responsibilities, but to afford additional protection to the public. The pharmacist's liability, therefore, is not predicated solely on the negligent act of the clerk but is imposed on him by his responsibility for the quality of his drugs. The jury was justified by the plaintiff's testimony in finding that the quality of the oil had become dangerously impaired prior to the sale by the clerk. Had the same adulterated oil been sold in some way by an automatic vending machine instead of by the clerk, the pharmacist's responsibility under the statute would be quite clear. The court accordingly affirmed the judgment against the pharmacist.—*Berry v. Daniels (Minn.), 263 N. W. 115.*

Society Proceedings

COMING MEETINGS

American Medical Association, Kansas City, Mo., May 11-15. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

American Academy of Pediatrics, Kansas City, Mo., May 11-12. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Association for the Study and Control of Rheumatic Diseases, Kansas City, Mo., May 11. Dr. Loring T. Swaim, 372 Marlboro St., Boston, Secretary.

American Association for the Study of Goiter, Chicago, June 8-10. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Corresponding Secretary.

American Association for the Study of Neoplastic Diseases, Baltimore, June 11-13. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.

American Bronchoscopic Society, Detroit, May 27. Dr. Lyman Richards, 319 Longwood Ave., Boston, Secretary.

American Dermatological Association, Swampscott, Mass., June 4-6. Dr. Fred D. Weidman, Medical Laboratories, University of Pennsylvania, Philadelphia, Secretary.

American Gynecological Society, Absecon, N. J., May 25-27. Dr. Otto H. Schwarz, 630 S. Kingshighway Blvd., St. Louis, Secretary.

American Heart Association, Kansas City, Mo., May 12. Dr. H. M. Marvin, 50 West 50th St., New York, Acting Executive Secretary.

American Laryngological Association, Detroit, May 25-27. Dr. James A. Babbitt, 1912 Spruce St., Philadelphia, Secretary.

American Laryngological, Rhinological and Otological Society, Denver, May 18-20. Dr. C. Stewart Nash, 708 Medical Arts Building, Rochester, N. Y., Acting Secretary.

American Neurological Association, Atlantic City, N. J., June 1-3. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 1-3. Dr. J. Milton Griscom, 235 South 17th St., Philadelphia, Secretary.

American Orthopedic Association, Milwaukee, May 18-21. Dr. Ralph K. Ghormley, Mayo Clinic, Rochester, Minn., Secretary.

American Otological Society, Detroit, May 28-29. Dr. Thomas J. Harris, 104 E. 40th St., New York, Secretary.

American Pediatric Society, Bolton Landing, N. Y., June 11-13. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.

American Physiotherapy Association, Los Angeles, June 28-July 2. Miss Jefferson I. Brown, Tichenor Hospital School, Long Beach, Calif., Secretary.

American Proctologic Society, Kansas City, Mo., May 11-12. Dr. Curtice Rosser, Medical Arts Bldg., Dallas, Texas, Secretary.

American Radium Society, Kansas City, Mo., May 11-12. Dr. E. H. Skinner, 1100 Grand Ave., Kansas City, Mo., Secretary.

American Society for the Hard of Hearing, Boston, May 26-30. Miss Betty C. Wright, 1537 35th St. N.W., Washington, D. C., Secretary.

American Society of Clinical Pathologists, Kansas City, Mo., May 6-10. Dr. A. S. Giordano, 531 North Main St., South Bend, Ind., Secretary.

American Urological Association, Boston, May 18-21. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Association for the Study of Allergy, Kansas City, Mo., May 11-12. Dr. Warren T. Vaughan, 808 Professional Bldg., Richmond, Va., Secretary.

Association for the Study of Internal Secretions, Kansas City, Mo., May 11-12. Dr. E. Kost Shelton, 34 Michelorena St., Santa Barbara, Calif., Secretary.

California Medical Association, Coronado, May 25-28. Dr. F. C. Warnshuis, 450 Sutter St., San Francisco, Secretary.

Conference of State and Provincial Health Authorities of North America, Vancouver, B. C., June 22-23. Dr. A. J. Chesley, State Department of Health, St. Paul, Minn., Secretary.

Connecticut State Medical Society, Hartford, May 20-21. Dr. Charles W. Comfort Jr., 27 Elm Street, New Haven, Secretary.

Illinois State Medical Society, Springfield, May 19-21. Dr. Harold M. Camp, 202 Lahl Building, Monmouth, Secretary.

Maine Medical Association, Rangeley, June 21-23. Miss Rebekah Gardner, 22 Arsenal St., Portland, Secretary.

Massachusetts Medical Society, Springfield, June 8-10. Dr. Alexander S. Begg, 8 The Fenway, Boston, Secretary.

Medical Library Association, Rochester, Minn., May 25-27. Miss Janet Doe, 2 E. 103d St., New York, Secretary.

Medical Women's National Association, Kansas City, Mo., May 10-12. Dr. Laila A. Coston-Conner, 333 East 68th St., New York, Secretary.

New Hampshire Medical Society, Manchester, May 26-27. Dr. Carleton R. Metcalf, 3 S. State St., Concord, Secretary.

New Jersey, Medical Society of, Atlantic City, June 2-4. Dr. J. B. Morrison, 66 Milford Ave., Newark, Secretary.

North Dakota State Medical Association, Jamestown, May 17-19. Dr. Albert W. Skelsey, 20½ Broadway, Fargo, Secretary.

Rhode Island Medical Society, Providence, June 3-4. Dr. J. W. Leech, 167 Angell St., Providence, Secretary.

Society of Surgeons of New Jersey, Orange, May 27. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Texas, State Medical Association of, Houston, May 25-28. Dr. Holman Taylor, 1404 W. El Paso St., Fort Worth, Secretary.

West Virginia State Medical Association, Fairmont, June 8-10. Mr. Joe W. Savage, Public Library Bldg., Charleston, Executive Secretary.

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Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

8:301-336 (March) 1936

Radical Treatment of Rectal Stricture. T. B. Hubbard, Montgomery. —p. 301.
Surgical Treatment of Ulcers of Stomach and Duodenum. J. O. Morgan, Gadsden.—p. 304.
Treatment of Prolapsus Uteri. L. F. Turlington, Birmingham.—p. 307.
Treatment of Pneumonia. J. H. Meigs, Anniston.—p. 309.
Alabama's Eighty-Nine Years of Medical Organization: Brief History of the Association. D. L. Cannon, Montgomery.—p. 313.

American Journal of Medical Sciences, Philadelphia

192:305-452 (March) 1936

Pneumococcus Type III Pneumonia: Analysis of Five Hundred Cases. R. L. Cecil, N. Plummer and M. McCall, New York.—p. 305.
Studies of Vitamin C Excretion and Saturation. J. B. Youmans, M. B. Corlette, J. H. Ahercrof and Helen Frank, Nashville, Tenn.—p. 319.
Clinical Observations on Pulmonary Blood Flow in Silicosis and Other Fibrotic Conditions of Lungs. H. R. Miller, New York.—p. 334.
Mumps Orchitis. A. Stengel Jr., Philadelphia.—p. 340.
Routine Diagnostic Procedure for the Patient Who Enters the Hospital in Coma. P. Solomon and C. D. Aring, Boston.—p. 357.
Paget's Disease (Osteitis Deformans): Analysis of One Hundred and Sixteen Cases. A. B. Gutman and H. Kaufbach, New York.—p. 361.
Previously Undescribed Granule Within Lymphocyte. E. A. Gall, Boston.—p. 380.
Bartonella Canis Infection in Relation to Secondary Anemia and Associated Underlying Lesions. O. L. Muncil, Philadelphia.—p. 388.
*Presence of Intrinsic Factor of Castle in Gastric Juice of Patients with Pernicious Anemia. S. M. Goldhamer, Ann Arbor, Mich.—p. 405.
*Treatment of Coronary Artery Disease by Intravenous Injections of Hypertonic Saline Solution. S. C. Feinberg, New York.—p. 410.
Cardiomegalia Glycogenica Circumscripta. L. E. Pinkelstein, Brooklyn. —p. 415.

Intrinsic Factor in Gastric Juice of Pernicious Anemia.—Goldhamer points out that, while the hypothesis of Castle, Townsend and Heath is of the greatest importance, it does not explain adequately (1) the characteristic spontaneous remissions that occur in pernicious anemia, (2) why patients in relapse have variable red blood cell counts, and (3) why those patients with pernicious anemia who apparently have no "intrinsic" factor in their gastric juice are able to produce at least some mature red blood cells, despite the specific conclusion that the intrinsic factor must be present in order to accomplish this. In an attempt to explain some of these questions, experiments were performed with gastric juice obtained from patients with pernicious anemia in relapse. The patients selected were proved to have pernicious anemia by their history, physical appearances and laboratory procedures. The red blood cell counts were made on a Neubauer-Levy counting chamber. The hemoglobin was calculated in a Sahli hemoglobinometer according to the recently modified method of Osgood and Haskins. The reticulocyte counts were made on brilliant cresyl blue stained coverslip preparations, and on each occasion 1,000 red blood cells were counted. The author found that the intrinsic factor of Castle is present in the gastric juice of patients with pernicious anemia in relapse. The deficiency of the gastric secretion in pernicious anemia appears to be quantitative rather than qualitative. The red blood cell count, in relapse, falls to a level determined by the amount of intrinsic factor which the patient is able to secrete in his gastric juice. Apparently erythropoiesis depends in part, at least, on the action of the intrinsic factor, and the rate of red blood cell formation is related to the amount of the intrinsic factor produced. Spontaneous remissions still remain in the realm of speculation.

Treatment of Coronary Disease by Saline Injections.—Three years ago, Feinberg gave a patient having arteriosclerotic closure of the leg vessels and coronary disease intravenous therapy accidentally before a cardiac examination was made. Three injections of 5 per cent sodium chloride solution of 300 cc. each had been given to the patient before the diagnosis was known. During the following three years of this treatment he had only one episode of angina. At the present time he receives a weekly injection of 300 cc. of a 5 per cent solution of sodium chloride. Today he can walk any distance without symptoms. During this period fifteen other patients with combined arteriosclerotic closure of leg vessels and coronary artery disease have been treated with intravenous injections of hypertonic solution of sodium chloride. No untoward accident has occurred. The results in these fifteen cases appeared so promising that six intractable cases of angina pectoris due to coronary artery disease without arterial involvement of the extremities were selected for special study. The group consisted of five cases of angina pectoris following coronary artery thrombosis and one case of coronary sclerosis in a diabetic patient. These patients had had coronary artery disease for at least six months and had not improved under the ordinary course of treatment. None of the six patients could walk one block without being stopped by precordial pain or dyspnea. The initial dose was 100 cc. of a sterile 5 per cent sodium chloride solution. Subsequent doses were increased by 50 cc. weekly up to a maximum of 250 cc. Injections were given three times a week. If precordial pain occurred during or immediately following the increased intravenous injection, it was evident that the heart was not ready for it. The author continued the therapy with the previous dose for a period of three weeks. The increased dose was then retried and was in every case successful. A graduated 300 cc. buret was used and the solution was given intravenously by gravity. The buret was about 3½ feet above the patient, who was lying horizontally. Patients were not hospitalized and came to the clinic unattended. These patients did not receive any drugs or other treatment after the intravenous injections were begun. Striking improvement occurred in all, evinced by definite and continuous clinical improvement. No claim is made that the arteriosclerotic process responsible for this disease is arrested. The treatment was employed in an attempt to increase the collateral circulation. The intravenous administration probably favors the development of collateral circulation through the finer ramifications of the coronary system. In selecting the first cases, care was taken to avoid those that showed nephritis, cardiac decompensation, cardiac arrhythmia and arterial hypertension over 180 mm. of mercury. The hypothesis is presented that the clinical improvement may be due to the fact that the treatment encourages a more rapid development of collateral circulation in the wall of the heart.

American Journal of Orthopsychiatry, Menasha, Wis.

6:1-182 (Jan.) 1936

Use of Kuhs Test as an Indicator of Mental Confusion. I. S. Wile and Rose Davis, New York.—p. 1.
Play Technics in Child Analysis. E. Liss, New York.—p. 17.
Uses of Books for Psychotherapy with Children. C. Bradley and Elizabeth S. Bosquet, East Providence, R. I.—p. 23.
Rorschach Test Replies and Results in One Hundred Normal Adults of Average Intelligence Quotient. G. E. Gardner, Waverley, Mass.—p. 32.
Psychologic Approach to the Problems of Psychiatry. J. D. M. Griffin, Providence, R. I.—p. 61.
Correlations of Intelligence Quotients of Porteus Maze and Binet-Simon Tests in Two Hundred Neuropsychiatric Patients. J. J. Michaels, Boston, and Margaret E. Schilling, Ann Arbor, Mich.—p. 71.
Significance of Juvenile Neuropathic Traits: Consideration of Their Rôle in Etiology of Functional Cardiovascular and Gastro-Intestinal Disorders and Exophthalmic Goiter. A. W. Hackfeld, Seattle.—p. 75.
Factors Affecting Success of Child Guidance Clinic Treatment. Ruth M. Hubbard and Christine F. Adams, Rochester, N. Y.—p. 81.
Childhood Manifestations and Adult Psychoses. A. S. Edwards and L. D. Langley, Athens, Ga.—p. 103.
Types and Incidence of Behavior Problems in Relation to Cultural Background. Marion R. Meyers and Hazel M. Cushing, Rochester, N. Y.—p. 110.
The Family as a Builder of Personality. L. G. Lourey, New York.—p. 117.
Pituitary Disturbances in Behavior Problems. M. Molitch and S. Poliakoff, Jamesburg, N. J.—p. 125.
Approach to Measurement of Mental Health. S. N. F. Chant and C. B. Myers, Toronto.—p. 134.
Functions and Limitations of Social Worker in Psychiatric Unit in Pediatric Clinic Outpatient Department. Fannie E. Teller, Philadelphia.—p. 141.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

20: 115-230 (March) 1936

Syphilitic Pseudobulbar Palsy with Compulsive Weeping. L. J. Karnosh and W. H. Conner, Cleveland.—p. 115.
Bismuth by Mouth in Treatment of Syphilis: Preliminary Experimental Study with Bismuth Chloride (Bismutrate) in Rabbit Syphilis. C. R. Rein and M. B. Sulzberger, New York.—p. 124.
*Oral Administration of Bismuth in Treatment of Experimental Rabbit Syphilis. J. E. Kemp and P. D. Rosahn, Chicago.—p. 131.
Syphilis of Spinal Cord. N. W. Winkelman, Philadelphia.—p. 146.

Bismuth by Mouth in Treatment of Experimental Syphilis.—In a study of the oral administration of bismuth in the treatment of early syphilis in the rabbit, Kemp and Rosahn found that: 1. Twenty-four daily doses each of 20 mg. of metallic bismuth as contained in a complex amino acid bismuth salt (bismutrate) per kilogram failed to alter materially the course of early syphilis in five of the six animals treated. Two of the four animals which were given twenty-four doses of 50 mg. per kilogram developed generalized lesions during treatment or a short time after it ended. The two remaining animals were still negative forty-one days after the experiment ended. The one animal that died after the sixth treatment still harbored actively motile spirochetes in the originally infected testicle. 2. Six animals fed twenty-four doses each of 20 mg. of metallic bismuth per kilogram as contained in bismuth sodium iron citrate experienced no change in the course of the infection, developing metastatic lesions in the testicle opposite to that inoculated in every instance. 3. Seven of eight rabbits fed potassium bismuth tartrate in doses of 20 mg. per kilogram still showed actively motile spirochetes in the inoculated testicle after the twenty-fourth treatment. Seven of the eight also developed metastatic lesions in the opposite testicle during or within twenty days after the treatment was terminated. 4. The results of the Kolmer blood Wassermann and Kahn tests, performed according to a technic modified for rabbits, gave no index of the course of the infection during treatment. 5. The study supports the observation of Serefis that it is impossible to use the syphilitic rabbit in determining the value of bismuth preparations intended for oral administration in the treatment of human syphilis.

Anatomical Record, Philadelphia

64: 277-412 (Feb. 25) 1936

Transplantation of Hypophysis Cerebri to Anterior Chamber of Eye in Albino Rats. C. L. Buxton, Boston.—p. 277.
Experimental Studies on Vagus and Spinal Accessory Nerves in Cat. F. S. DuBois and J. O. Foley, University, Ala.—p. 285.
Observations on Ovulation in Rabbit. J. E. Markee and J. C. Hinsey, Palo Alto, Calif.—p. 309.
Extrusive Growth and Attrition of Incisors in Albino and Hybrid Rattus Norvegicus (Erxleben). A. R. Shadle, L. G. Wagner and T. Jacobs, Buffalo.—p. 321.
Studies in Wave Mechanics of Muscle: III. Anastomotic Fibers, Central Nuclei and Intercalated Disks in Cross Striated Skeletal Muscles of Guinea-Pig (Cavia Cobaya). E. J. Carey, Milwaukee.—p. 327.
Id.: VI. Areas of Cohnheim Are Transverse Sections of Cross Striations of Striated Muscle Fiber. E. J. Carey and W. Zeit, Milwaukee.—p. 343.
Method for Staining Pepsinogen Granules in Gastric Glands. D. J. Bowie, Montreal.—p. 357.
*Orientation of Venous Valves in Relation to Body Surfaces. E. A. Edwards, Boston.—p. 369.
Adaptation of Transparent Chamber Technic to Ear of Dog. R. L. Moore, Philadelphia.—p. 387.
Origin of Notochord in Alligator Mississippiensis. A. M. Reese, Morgantown, W. Va.—p. 405.
Example of Thoracopagus Tribrachius in Mouse. C. V. Green, Bar Harbor, Maine.—p. 409.

Orientation of Venous Valves in Relation to Body Surfaces.—Edwards describes a seemingly constant orientation of the valves of veins of the extremities. The vein at the site of a valve is elliptic in cross section, the major axis of the ellipse being parallel to the skin or its tangent. Within the vein at the site of the valve the two cusps arise from the long curves of the ellipse, so that the aperture between their free margins is also parallel to the overlying skin. The advantage of this arrangement is that the compression transmitted to the veins by overlying structures produces secure apposition of the cusps to each other and thereby ensures the competence of the valve. The demonstration of the relationship of venous valves to the overlying skin is based on anatomic dissections and on roentgen studies of the living subject. Presumably a similar relationship exists between venous valves and adjacent surface planes in the interior of the body. Actual observation, however, has been extended only to one fairly constant valve in the external iliac vein, in which the cusps are definitely oriented in a plane parallel to the parietal peritoneum.

Archives of Dermatology and Syphilology, Chicago

33: 413-604 (March) 1936

*Ten Years' Experience in Treatment of Lupus Erythematosus with Gold Compounds. C. S. Wright, Philadelphia.—p. 413.
Etiology of Lupus Erythematosus: Occurrence in the Negro. C. L. Cummer, Cleveland.—p. 434.
Measurements of Depth Dose for Roentgen Therapy Used in Dermatologic Practice. G. C. Andrews and C. B. Braestrup, New York.—p. 446.
LXXII. Pityrosporum Ovale (Bottle Bacillus of Unna, Spore of Malassez): Cultivation and Possible Rôle in Seborrheic Dermatitis. M. Moore, R. L. Kile, M. F. Engman Jr. and M. F. Engman, St. Louis.—p. 457.
*Granuloma Annulare: Report of Unusual Cases with Comment on Histology of Disease. M. H. Goodman and L. W. Ketron, Baltimore.—p. 473.
*Cutaneous Tags of Neck. H. J. Templeton, Oakland, Calif.—p. 495.
Cicatrizing Morphea with Ankylosing Arthritis and Osteoblastic Change: Report of Case. S. Crawford, Pittsburgh.—p. 506.
Effect of Hyperpyrexia in Treatment of Chronic Recurrent Dermatoses: Clinical and Biochemical Studies, with Especial Reference to Lipids and Lactic Acid: Preliminary Report. I. Rosen, H. Rosenfeld and Frances Krasnow, New York.—p. 518.

Treatment of Lupus Erythematosus with Gold Compounds.—Wright discusses the cases of seventy-six patients with lupus erythematosus, for whom the outlook was hopeless, who were treated during a period of ten years with gold compounds, chiefly with gold and sodium thiosulfate. Twenty-eight patients are regarded as cured, twenty-six were almost cured or were greatly improved, thirteen were improved moderately or slightly and nine failed to respond favorably to the treatment. Of the patients regarded as cured two have been well with no relapse for seven years, two for six years, two for five years and three for four years. The amount of gold and sodium thiosulfate required for cure varied from a minimum of 12 mg. in one patient to a maximum of 2,750 mg. in another. Thirteen patients suffered one or more relapses after being partially or entirely free from lesions. In some patients the lesions cleared again following further treatment with the drug, and some were discouraged and refused further therapy. Nineteen of the patients suffered a reaction of one type or another from the gold. The commonest was a scarlatiniform dermatitis, which occurred in eight cases. No fatality occurred in the series except in one case in which dissemination of the eruption and death occurred following the use of a foreign preparation of gold. The safety of administering gold compounds has been greatly enhanced by a better understanding of dosage and of the warning signs of intolerance, which lead the physician to take measures to prevent serious accidents. It is the author's distinct impression that the percentage of cure would be even higher with modern therapy if entire cooperation by the patient could be achieved, for certainly in some cases improvement could have become cure by additional therapy.

Annular Granuloma.—Goodman and Ketron report two cases of annular granuloma which show, besides typical lesions, those of a large circinate type resembling the lesions of toxic erythemas. A detailed study of the histopathologic character of the disease, based on a total of twelve cases, is presented showing the various gradations from early changes as illustrated in the erythematous manifestations to those found in the later stages present in the more characteristic lesions. From their studies they believe that annular granuloma presents a characteristic histologic picture, particularly in the early stages, in which the first changes appear to be a granular degeneration of the connective tissue, either diffuse or localized in more sharply circumscribed areas. This is followed by a cellular infiltrate of large mononuclear cells of the macrophage type, which, with connective tissue cells, tend to arrange themselves between the partially degenerated fibers or around the edges of circumscribed necrotic zones in a characteristic manner. Although there was a considerable perivascular inflammatory reaction present, no marked occlusive changes were found in the blood vessels, and they show no particular relationship to either the early or the later necrotic changes in the connective tissue. Polymorphonuclear neutrophilic leukocytes, although occasion-

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ally found, are strikingly absent in all stages of the disease. Occasionally plasma cells and eosinophils are encountered. In the later stages, annular granuloma resembles histologically the juxta-articular and rheumatoid nodules in certain cases except with respect to the vascular changes found in the latter.

Cutaneous Tags of the Neck.—Templeton describes lesions that begin as tiny flesh colored papules ranging in size from a pinpoint to a pinhead. They occur almost invariably on the necks of middle-aged women, being most common on the lateral and anterior aspects, occasionally appearing on the chest. They vary in number from a few to hundreds. While most of them remain as papules about a millimeter in diameter, a number grow to the height of 1 or 2 mm. and exist as pedunculated filiform tags. In general they retain the normal color of the skin, but a few become slightly darker. They do not tend to grow to the size attained by the tumors seen in cases of Recklinghausen's disease. As it has been suggested that this disorder might be related to Recklinghausen's disease, he examined many patients with this disorder, without finding a single example of neurofibromatosis of the trunk. Microscopic observations demonstrated that the tags are not tumors of fibrous tissue origin. Moreover, the negative results with the Van Gieson stain militate against their arising from nerve tissue and constituting a sign of Recklinghausen's disease. Cutaneous tags of the neck need to be differentiated from digitate warts and molluscum fibrosum; histologically, they show a relatively simple outgrowth or excrescence of epidermis and corium, while the lesions of molluscum fibrosum show a typical growth of neurofibromatous tissue in the corium. The author has found that the best treatment is to destroy each lesion with a very fine electrodesiccating spark. It is his belief that they constitute an entity apart from warts and fibromas, and he suggests the name cutaneous tags of the neck.

Delaware State Medical Journal, Wilmington

8: 17-36 (Feb.) 1936

Infections of Upper Urinary Tract. J. C. Birdsall, Philadelphia.—p. 17.
Urology and the Child. B. S. Vallett, Wilmington.—p. 26.

Journal of Allergy, St. Louis

7: 203-318 (March) 1936

Gastric Acidity and Acid Therapy in Allergy. Mary Loveless, New York.—p. 203.
Kapok: Its Importance in Clinical Allergy. H. C. Wagner and F. M. Rackemann, Boston.—p. 224.
Fungi Found in Pillows, Mattresses and Furniture. N. F. Conant, H. C. Wagner and F. M. Rackemann, Boston.—p. 234.
Influence of Various Drugs on Allergic Reactions. L. Tuft and M. L. Brodsky, Philadelphia.—p. 238.
*Immunologic Aspect of Tobacco in Thrombo-Angiitis Obliterans and Coronary Artery Disease. A. Trasoff, G. Blumstein and M. Marks, Philadelphia.—p. 250.

Tobacco, Thrombo-Angiitis Obliterans and Coronary Artery Disease.—The studies of Trasoff and his associates do not justify the contention that hypersensitiveness of the vascular system to tobacco is the mechanism in thrombo-angiitis obliterans and coronary artery disease. They have frequently noticed direct relationship between vascular crises and smoking, whether symptoms occurred in the lower extremities or in the coronary system. Three patients with thrombo-angiitis obliterans and four with coronary disease volunteered the information that smoking initiated pain. Definite electrocardiographic changes were demonstrated during the process of smoking in a few patients. On a pharmacologic basis only, tobacco or its derivatives react directly on the sympathetic nervous system causing a vasoconstriction which is manifested as an increase in blood pressure and pulse rate with a lowering of the surface temperature of the skin. Nicotine may not be the element at fault, and there are still many toxic substances in tobacco which cannot be eliminated definitely. The authors state that, while their series is relatively small, the results are uniform. The only group in which the percentage of positive skin tests was comparatively high was the allergic. It is known, however, that many nonspecific reactions are frequently obtained in such individuals. Of sixty-three unselected asthmatic children from the ages of 3 to 12 years whom Chobot tested to various tobacco extracts, only six gave negative skin tests. Tobacco apparently was not an etiologic factor in their asthma. The incidence of cases in which tobacco is a proved atopen is not very great. According to Brown, tobacco accounts for 1 per cent in the nosology of his asthmatic patients, while in the authors' experience it amounts to less than 1 per cent. The failure to demonstrate reagins for tobacco on passive transfer tests in all patients except one, who reacted to tobacco, also argues against its significance in allergy. Of the hundreds of allergic patients whom they have studied, they do not recollect any with thrombo-angiitis, and no greater proportion of coronary disease than one ordinarily meets among the nonallergic persons about the fifth decade of life. There is no essential difference in skin reactivity to tobacco between the normal smokers and nonsmokers.

New England Journal of Medicine, Boston

214: 501-562 (March 12) 1936

Malignancy of the Breast. H. G. Jarvis, Hartford, Conn.—p. 501.
Results in Mammary Carcinoma at the Elliott Hospital. G. C. Wilkins and G. F. Dwinell, Manchester, N. H.—p. 503.
Morphine and Intestinal Activity. F. F. Yonkman, Boston; J. M. Hiebert, New York, and H. Singh, Boston.—p. 507.
The Management of Gonorrhea: IV. Treatment of Gonorrhea in the Male. The Neisserian Medical Society of Massachusetts.—p. 527.
Review of Cardiac Deaths in Twelve Hundred and Forty-Five Medical Examiners' Cases That Have Come to Autopsy in the Massachusetts State Hospitals for Mental Diseases. Anna M. Allen, New York.—p. 533.
Report of Perforation of Uterus with Protrusion of Appendix Through the Hiatus. F. Djerf, Fitchburg, Mass.—p. 534.

Northwest Medicine, Seattle

35: 79-118 (March) 1936

Common Forms of Heart Disease: Their Recognition and Treatment. W. H. Holmes, Chicago.—p. 79.
*Diuretics in Treatment of Cardiac Edema. J. E. Wood Jr., University, Va.—p. 84.
Intravenous Sucrose as Diuretic. J. G. Strohm and S. B. Osgood, Portland, Ore.—p. 89.
Coramin: Its Value in Treatment of Coronary Disease and Cardiovascular Disturbances. J. L. Brower and S. Korry, New York.—p. 89.
Method of Retaining Soft Rubber Catheter in the Male Urethra. E. M. Bevis, Tonasket, Wash.—p. 92.
Significance of Itching in Obstructive Jaundice. D. Metheny, Seattle.—p. 93.
Causes and Treatment of Urinary Retention. P. H. Nitschke, Portland, Ore.—p. 95.
Hematuria. W. L. Ross Jr., Yakima, Wash.—p. 100.
Carcinoid and Carcinoma of Appendix. M. S. Rosenblatt and T. D. Robertson, Portland, Ore.—p. 103.

Diuretics in Treatment of Cardiac Edema.—Wood states that rest in bed, proper digitalization and restriction of fluid intake will produce loss of edematous fluid in many cases. More dramatic improvement has occurred in patients with auricular fibrillation, though patients having congestive heart failure with normal rhythm may benefit markedly from full digitalization. In patients with cardiac edema, quite satisfactory diuresis not infrequently accompanies rest in bed alone. A period of observation during rest and digitalization is necessary. The author's study in diuresis attempts to set forth his experience with patients in whom frequently it has been expedient to administer certain drugs rather than adhere to experimental uniformity. During the actual period of marked diuresis following drug administration, the fluid intake should be temporarily increased. Rigidity in the limitation of water is unwise in this respect and elasticity would seem a safer and more comfortable policy for the patient. Instances of temporary psychosis following rapid dehydration are frequent enough to claim attention. Unfavorable body changes may follow too rapid dehydration and, whereas no conclusive data are available at present, an attempt should be made to meet the days of excessive water output with a somewhat increased intake. Ordinarily, only the specific diuretics, particularly those used intravenously, cause single days of tremendous urinary output. Generally diuresis following rest and digitalis comes on and fades gradually, and it would seem that adjustment to dehydration would therefore occur with less disturbance. For this and other reasons, digitalis and fluid restriction are tried first in the treatment of cardiac edema. However, these measures, while sufficient for some, may be temporary and incomplete in many patients. Numerous substances have been recommended for their diuretic effect, but the author's discussion includes only the xanthine and mercurial diuretics and their combined action with certain inorganic salts. Xanthine diuretics should be tried after digitalization and before

turning to the mercurial drugs. Noteworthy of the xanthines is their better action in patients with hypertensive and arteriosclerotic heart disease. They are less effective in rheumatic heart disease. Presumably the xanthines primarily increase filtration, while the mercurial diuretics decrease reabsorption. The value of diuretics in the treatment of cardiac failure need not be questioned. Generally speaking, patients with hypertensive and arteriosclerotic heart disease respond best to diuretic drugs. Should rest, fluid restriction, diet and adequate digitalization fail in the treatment of cardiac edema, the xanthine and mercurial diuretics should be tried preferably in the order mentioned. Combination of these drugs with certain salts and with one another may promote diuresis. The diuretic drugs should not be used as a last resort, as edema may increase cardiac work and impair cardiac efficiency, and the early use of suitable diuretic drugs may therefore have a double advantage.

Ohio State Medical Journal, Columbus

32: 193-288 (March 1) 1936

Some Undesirable Effects from Prolonged Use of Various Barbiturates. C. W. Stone, Cleveland.—p. 209.

Headache of Nasal Origin. W. E. Sauer, St. Louis.—p. 212.

*Fusospirochetal Lung Infections in Children: Report of Case in Infant of Fourteen Months. W. B. Taggart, Dayton.—p. 218.

The Management of Patients with Hypertension. H. C. King, Lakewood.—p. 220.

Nephroptosis. P. G. Smith and G. F. McKim, Cincinnati.—p. 223.

Importance of Recognition of Serum Disease. M. B. Cohen, Cleveland.—p. 225.

Sarcoma of Uterus. A. H. Potter, Springfield.—p. 227.

Hysterectomy: Clinical and Statistical Study. R. L. Faulkner, Cleveland.—p. 229.

Surgical Procedure for Relief of Pain. H. E. LeFever, Columbus.—p. 234.

A Newly Discovered Cause of Asthma. J. Biederman, Cincinnati.—p. 236.

A Case Record Presenting Clinical Problems: Pain Across Kidneys Followed by Weakness and Pain in Right Chest. H. L. Reinhart and G. M. Curtis, Columbus.—p. 237.

Fusospirochetal Lung Infections in Children.—Taggart presents an account of fusospirochetal pulmonary infection in a white male infant 14 months of age. The original infection had its beginning in the form of a gingivitis, which led him to assume that the lung involvement was an aspiration phenomenon. The patient has been irregularly followed for a year and a half, during which time the process has gradually improved and his growth and weight gain have been uninterrupted in spite of the added insult of attacks of grip and measles. Because of the proximity of some of the abscess cavities to the pleural surface, surgical intervention was considered inadvisable. Bismuth preparations were decided on because of the child's evident low systemic reserve, the evidence of an extreme degree of cloudy swelling of the liver and unusual demands on the hematopoietic system. Arsenical acetarsone was employed for about ten days without any apparent remarkable change in an already improved condition.

Science, New York

83: 245-270 (March 13) 1936

Child Development and the Interpretation of Behavior. J. E. Anderson, Minneapolis.—p. 245.

Cortical Excitatory State and Variability in Human Brain Rhythms. H. H. Jasper, Providence, R. I.—p. 259.

Influence of Hyperpnea and of Variations in the Oxygen Tension and Carbon Dioxide Tension of Inspired Air on Word Associations. E. Gellhorn and S. H. Krainess, Chicago.—p. 266.

*Influence of Adrenal Glands on Calcium Metabolism. I. Schour and J. M. Rogoff, Chicago.—p. 267.

Anopheles Experimentally Infected with Malaria Plasmodia. J. S. Simmons, Ancon, C. Z.—p. 268.

Device for the Motor Conditioning of Small Animals. W. J. Brogden and E. Culler, Urbana, Ill.—p. 269.

Aid in Color Blindness. T. Ross, Seattle.—p. 270.

Influence of Adrenals on Calcium Metabolism.—Schour and Rogoff state that the occurrence of globular predentin in adrenalectomized rats, as in animals that were subjected to the action of parathyroid extract, confirms the observation that adrenal insufficiency is associated with disturbances in calcium metabolism. It also lends support to the suggestion of a functional interrelationship between the adrenals and the parathyroids. It seems possible that the disturbances in calcium metabolism which lead to the changes in the dentin in adrenalectomized animals may be the result of functional disturbances in the parathyroids. Although evidence favors the probability that the adrenal cortex is primarily involved, the possible relation of the medulla has not been excluded in these experiments.

Southern Medical Journal, Birmingham, Ala.

29: 221-338 (March) 1936

Radiation Therapy in Cancer of Mouth, Pharynx and Larynx. J. M. Martin, Dallas, Texas.—p. 221.

Rôle of Radiation Therapy in Treatment of Inoperable Deep Seated Abdominal Malignancies: Report of Case of Adenocarcinoma of Stomach. C. A. Waters, Baltimore.—p. 228.

Carcinoma of Skin in Its Early Manifestations: Correlation of Clinical and Microscopic Observations with Hypothesis of Etiology in Somatic Mutation. R. L. Sutton Jr., Kansas City, Mo.—p. 235.

African Sleeping Sickness: Clinical Study. E. R. Kellersberger, Bibanga, Congo Belge, Africa.—p. 239.

Limitations of Intravenous Urography. T. D. Moore, Memphis, Tenn.—p. 242.

Treatment of Traumatic Arteriovenous Aneurysms. J. M. Mason, Birmingham, Ala.; R. M. Pool, Fairfield, Ala., and J. P. Collier, Tuscaloosa, Ala.—p. 248.

*Wandering Bullet in Spinal Canal: Report of Case. C. Pilcher, Nashville, Tenn.—p. 257.

*Osteochondritis Dissecans as Related to Trauma. R. V. Funsten and P. Kinser, University, Va.—p. 262.

Repair of Old Muscle Tendon Avulsions. C. F. Sherwin, St. Louis.—p. 266.

Hyperplasia of Endometrium: Study of Endometrium After Treatment. E. C. Hamblen and W. L. Thomas Jr., Durham, N. C.—p. 269.

Evaluation of Radiotherapy for Carcinoma of Uterus After Fifteen Years' Experience at the Woman's Hospital. G. G. Ward, New York.—p. 282.

Induction of Labor by Artificial Rupture of Membranes Without Quinine: Comparison with Several Methods. J. W. Reddoch, New Orleans.—p. 289.

Intracellular Parasitism and Cytotropism of Viruses. E. W. Goodpasture, Nashville, Tenn.—p. 297.

Epidemiologic Principles. L. L. Lumsden, New Orleans.—p. 303.

Deficiency Polyneuritis. H. M. Winans and E. M. Perry, Dallas, Texas.—p. 309.

The Stomach and Anemias. H. E. Murry, Texarkana, Ark.—p. 312.

Purpura in Children. C. M. Pounders, Oklahoma City.—p. 317.

Expulsive Choroidal Hemorrhage Complicating Cataract Extraction. A. O. Pfingst, Louisville, Ky.—p. 323.

Tracheobronchial Suction Tube. W. B. McWhorter, Anderson, S. C.—p. 328.

Fracture of Shaft of Femur. H. G. Hill, Memphis, Tenn.—p. 328.

Pyloric Stricture Following Ingestion of Muriatic Acid. J. M. Arena, Durham, N. C.—p. 331.

Wandering Bullet in Spinal Canal.—In the case reported by Pilcher the bullet entered the spinal canal from the anterior side, reaching the free space in the canal posterior to the cord or cauda equina without having done much damage to these structures or to the bones of the vertebral column. The question arises as to whether the injuries to the nerve were due to the bullet or whether they resulted from compression of the nerves by a large hematoma lying anterior to the spine. The only analogous case found in the literature is that reported by Fergor, whose patient had a bullet in the spinal canal at the upper lumbar level without any neurologic symptoms. Regardless of whether the bullet was the direct cause of the nerve injury in the present case, it is certain that it would sooner or later have caused trouble and that its removal was indicated. The bullet in the present case is known to have moved freely both up and down the spinal canal and its position could be changed at will by altering the patient's position. It seems likely that it was pushed ahead of the exploratory catheter at the time of the first spinal exploration. The case serves as a warning that the exact position of foreign bodies thought to be in the spinal canal should be determined immediately before the exploration for their removal.

Osteochondritis Dissecans as Related to Trauma.—In Funsten and Kinser's series of twenty-three cases of osteochondritis dissecans seventeen gave a definite history of trauma to the involved joints. One of the remaining six patients spent many hours daily working on his knees. One case was associated with rupture of the internal semilunar cartilage and, following the removal of the cartilage and osteocartilaginous body, there was entire freedom from symptoms in four weeks. The classic case of osteochondritis dissecans shows on roentgen examination involvement of the inner condyle of the femur. The lesion was bilateral in three of the reported cases: in the patella, head of the femur and acetabulum. A case with osteochondritis dissecans of the carpal scaphoid and another of the semilunar are reported.

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FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 143-194 (Jan. 25) 1936

Silicates of Magnesium. N. Mutch.—p. 143.
Relation of Ovarian Cycle to Endocrinology. N. M. Fa'biner.—p. 149.
Removal of Tonsils by Electrical Currents of High Frequency. A. Eidinow.—p. 152.
Oxygen Administration by Nasal Catheter. H. L. Marriott and K. Robson.—p. 154.
*Splenectomy for Thrombocytopenic Purpura. Gwendoline Smith.—p. 157.

Splenectomy for Thrombocytopenic Purpura.—Smith reports a case and believes that, until more knowledge of the pathology of thrombocytopenic purpura is gained, the value of any one method of treatment must be based on isolated records. Evidence is in favor of the spleen being only one part of a diseased reticulo-endothelial system, and some observers do not recommend splenectomy on the ground that only partial removal of the diseased tissues is effected. It seems that the spleen is certainly one of the largest single structures affected, and, if clinical results show that patients are improved and remain well, it would appear wiser to base treatment on these results. The actual platelet count is not a certain index of the severity of the disease or of the degree of recovery after operation. The platelet count may rise as soon as the splenic vessels are secured but may not show any increase for some days later. The criterion of permanent recovery is freedom from hemorrhages and purpura over an indefinite number of years. The presence of accessory spleens is occasionally a cause of recurrent symptoms, and they should be looked for at operation and removed if found. In a certain number of cases a long period of good health has been assured by operation in the acute and chronic states of the disease. In acute cases that fail to respond to medical measures the mortality without surgical intervention is in the region of 100 per cent. In chronic cases the indications are not so clear, but splenectomy would appear advisable in those of moderate severity which fail to improve with drugs and blood transfusions or suffer from acute exacerbations of purpura, with a persistent low platelet count. Cases of mild severity will respond to treatment of anemia and removal of septic foci. A certain percentage of recurrences must be expected, but one may anticipate that even then the symptoms will gradually lessen and eventually disappear in the majority.

Lancet, London

1: 179-238 (Jan. 25) 1936

Clinical Medicine: Farewell Lecture. Horder.—p. 179.
*Exophthalmos Following Administration of Thyroid Extract. W. R. Brain.—p. 182.
Early Amputation for Severe Crushing of Limbs: Note on Twenty Cases. L. Abdelsamie.—p. 187.
Gallop Rhythm and Physiologic Third Heart Sound. C. Bramwell.—p. 189.
Some Dysentery in Mental Hospital. J. J. Laws.—p. 192.
Sarcoma of Duodenum. G. Slot and M. H. Fridjohn.—p. 194.
Spontaneous Fracture in Acute and Subacute Osteomyelitis: Report of Two Cases. R. C. Tatham.—p. 195.
Twin-Locking: Two Cases. J. S. Coleman.—p. 196.
Inhalation of Common Pins. J. McFarland.—p. 198.

Exophthalmos Following Administration of Thyroid Extract.—Brain states that the difficulty of explaining exophthalmos is enhanced by the fact that the administration of thyroxine or of thyroid extract, whether experimentally to animals or therapeutically to man, does not as a rule lead to exophthalmos. Not more than twenty such instances have been reported. The development of progressive exophthalmos in patients who have previously undergone subtotal thyroidectomy for thyrotoxicosis is a closely related phenomenon, since this may be precipitated by the administration of thyroid extract to correct postoperative hypothyroidism. A new case of exophthalmos following the administration of thyroid extract is presented. The significance of this sequence of events is discussed in the light of this and previously reported cases and of recent experimental work on exophthalmos. Exophthalmos can be produced experimentally by the administration to animals of drugs that stimulate the sympathetic nervous system. Thyroxine appears to facilitate the action of such drugs in producing exophthalmos. Exophthalmos can be produced by the thyrotropic hormone of the pituitary both in intact animals and in animals from which the thyroid has been removed, and there is some evidence that this hormone produces exophthalmos more readily in the presence of hypothyroidism. Progressive exophthalmos may develop spontaneously following subtotal thyroidectomy in man even when the basal metabolic rate is subnormal, or may be precipitated in such individuals by the administration of thyroid extract. Very rarely the administration of thyroid extract for the treatment of myxedema, the relief of obesity or some other purpose is followed by the development of exophthalmos. It is probable, therefore, that, when exophthalmos follows the administration of thyroid extract, this is not a direct result of the action of the thyroid extract but is due to some other substance which in certain rare individuals is produced in response to thyroid extract. Experimental evidence suggests that this substance may be the thyrotropic hormone of the pituitary.

Medical Journal of Australia, Sydney

1: 73-108 (Jan. 18) 1936

What Medicine Owes to War and War Owes to Medicine. R. M. Downes.—p. 73.
Transurethral Prostatic Resection: Series of Operations on One Hundred Patients. J. W. S. Laidley and M. S. S. Earlam.—p. 80.

South African Medical Journal, Cape Town

10: 1-36 (Jan. 11) 1936

History of Medicine: Leprosy in Cape Colony (1756-1892). P. J. Venter.—p. 1.
O Agglutinins for Bacillus Typhosus in an Uninoculated Native Population. W. D. Alves.—p. 6.
T. A. B. and Brucella Agglutinins in an Uninoculated Native Population. W. D. Alves.—p. 7.
"Normal" Agglutinins and Their Bearing on Diagnosis of Typhoid Fever by Agglutination Tests. W. D. Alves.—p. 9.
Possibility of Eradicating Bilharzia by Extensive Planting of the Tree Balanites. V. A. Wager.—p. 10.
Climate and the Native. A. O. Dreosti, A. J. Orenstein and J. S. Weiner.—p. 11.
*Modern International Type Classification of Leprosy. R. C. Germond.—p. 17.
Diet and Health in South Africa: II. Malnutrition. F. W. Fox.—p. 25.

The Modern International Type Classification of Leprosy.—Germond gives the new international classification of types of leprosy. First, as regards the definition of the most important terms: 1. It is suggested that the term "leprotic" be applied to changes that present clinical or microscopic evidence of inflammatory processes, typically of granulomatous nature, which are apparently caused by Mycobacterium leprae in them. In such lesions the organism can usually be demonstrated by the ordinary methods of examination. 2. "Infiltration" is a term commonly applied to a diffuse thickening of leprotic nature involving the skin or mucosa which is not of definite nodular, papular or macular form. The term may also be applied to diffuse leprotic conditions in other organs. 3. A nodule is a definitely thickened, rounded, circumscribed mass of leprotic nature commonly occurring in the skin, subcutaneous tissue or mucosa. 4. A papule is a small solid elevation of the skin, of leprotic nature, not more than 5 mm. in diameter. 5. A macule is a circumscribed area of skin showing changes in color, sometimes with slight elevation or depression. Secondly, the proposed classification is given as follows: All neural (N) cases are those that show evidence of actual or previous neural involvement, alterations of sensation with or without changes in pigmentation and circulation, trophic disturbances or paralyses and their consequent results: atrophies, contractures, ulcerations. These are not accompanied by leprotic changes in the skin. All cutaneous (C) cases are those that show leprotic lesions in the skin. Such cases may or may not show, at any given time, clinical manifestations of neural involvement. Subtypes are classed NI, NII and NIII, on the one hand, and CI, CII, CIII, on the other, according to the degree of severity. In all cutaneous types there may be varying degrees of neural involvement, and such cases should be recorded to indicate the degree of involvement; as, for example, C_2N_1. Secondary neural are those neural cases that were formerly cutaneous but from which the active leprotic lesions have disappeared.

Gazette Médicale de France, Paris

48: 41-88 (Jan. 15) 1936

Acute Benign Adenolymphoiditis. R. Debré, M. Lamy, R. Mesnimy and J. Bernard.—p. 49.
Rickets in Haiti. M. Armand.—p. 53.
Rôle of Traumatism in Etiology of Parkinsonian Syndromes. P. Derville—p. 55.
*Some Remarks on Rapid and Radical Reduction of Infantile Scolioses by Hyperelevation of Shoulder. J. Le Cam.—p. 63.
Optic Neuritis of Pentavalent Arsenic. P. de Font-Réaulx.—p. 73.

Reduction of Infantile Scolioses.—Le Cam has previously described a law which he believes is valuable in the correction of infantile scoliosis. This law may be stated as follows: If a shoulder is maintained in an elevated position, it results in the hypertrophy of the corresponding hemithorax and the atrophy of the opposite hemithorax. It thus forces the vertebral column to curve and inevitably produces the formation of a scoliosis, the convexity of which is toward the side of the raised shoulder. A number of cases of infantile scoliosis have been treated by applying this law. When properly performed, there is no necessity to fear that the shoulder which was raised by the aid of an elastic tampon will remain raised after the end of the treatment. All scolioses of nurslings treated immediately are cured rapidly and permanently. Later the reduction of the curve is obtained rapidly if it is of recent origin and not too pronounced. The less exaggerated scolioses remain treatable for a longer time. He recommends this treatment as a relatively simple and effective method of meeting the problem of scoliosis in infants and children.

Clinica Medica Italiana, Milan

67: 73-144 (Feb.) 1936

Gastric Chemism and Acidosis in Gastroduodenal Ulcers. Tusnelda Tamburri and F. Torchiana.—p. 75.
*Intravenous Chromoscopy in Achylia. A. Allodi and F. Quaglia.—p. 88.
*Velocity of Blood Circulation from Cubital and Dorsal Veins. A. Bertola.—p. 102.
Acute Cardiovascular Insufficiency Secondary to Diseases of Respiratory Tract: Cases. L. Capani.—p. 117.
Ferments in Fluids of Effusions: Amylase. N. Fucci.—p. 136.

Intravenous Chromoscopy in Achylia.—Allodi and Quaglia performed gastric chromoscopy after an intravenous injection of 0.005 Gm. of neutral red in 10 cc. of distilled water in sixty-five patients suffering from achylia, which persisted in all but fifteen cases in the group after the administration of Ewald's meal and in about half the number of patients after performance also of the histamine test. The results of chromoscopy are considered negative when the dye fails to appear in the gastric juice within seventy minutes of the intravenous injection. Chromoscopy gave late positive results in half the number of patients of the first group and negative results in the other half. In the latter subgroup, however, the results became positive by performance of the histamine test immediately after failure of chromoscopy. In patients of the second group, chromoscopy gave negative results, which were not modified by the performance of the histamine test immediately after failure of chromoscopy, except in four cases. The authors conclude that chromoscopy is not a substitute for the histamine test in the diagnosis of achylia, but it has a complemental value to the test. The results of the latter are analogous to those of the former, but they are not constantly in mutual accordance with each other. The authors advise a chromoscopy in all patients in whom achylia persists after administration of Ewald's meal, regardless of the results, either positive or negative, of the histamine test, and also the histamine test immediately after failure of chromoscopy. The failure of the latter after the failure of the histamine test is probatory for the existence of complete achylia. The technic of chromoscopy is easy and no unfavorable complications follow its performance.

Velocity of Blood Circulation from Cubital and Dorsal Veins.—Bertola made determinations of the velocity of circulation in fifty persons, aged from 18 to 80, including normal persons and patients suffering from cardiac diseases, anemia, ascites, edema and certain infections. The circulation time was measured by the calcium chloride method from the cubital vein of the arm and the dorsal vein of the foot to the arteries of the head. The author found that the velocity of circulation is greatly diminished in cardiac diseases, especially in the stages of decompensation. Circulation from foot to head is slower than circulation from arm to head in cardiac patients, a fact that is explained by the modifications of the venous pressure and the existence of stasis. The velocity of circulation, both from the cubital and the dorsal veins, is increased in anemia, and the more intense the anemia the more rapid the circulation. The relation between the rapidity of circulation and the intensity of anemia is not constant, however, and there are many patients suffering from intense anemia in whom the circulation time is either normal or retarded. The increase of the velocity of circulation in anemia is due to a mechanism of compensation connected with the diminution of the power of oxygenation of the blood. Normal or retarded circulation is probably due to myocardial insufficiency, which interferes with the establishment of the compensatory mechanism. Circulation from both the cubital and the dorsal veins is increased in febrile diseases of the respiratory tract, probably owing to the increased output of blood during fever and the resulting increased frequency of the pulse. It is normal in patients suffering from abdominal tumors with ascites and edema as well as in diabetic patients.

Prensa Médica Argentina, Buenos Aires

23: 481-542 (Feb. 19) 1936

*Bronchial Factor in Ayerza's Disease. M. R. Castex, E. L. Capdehourat and E. S. Mazzei.—p. 481.
Fistulography and Cholangiography During Operations. P. L. Mirizzi.—p. 520.
Provoked Pneumothorax in Pulmonary Tuberculosis: Accident of Work. B. B. Spota.—p. 521.
Congenital Solitary Kidney: Clinical Diagnosis; Case. F. J. Farlet and A. R. Rufino.—p. 522.
Intradermal Anesthesia in Acute Phlegmasia. A. F. Parodi.—p. 526.

Bronchial Factor in Ayerza's Disease.—Castex and his collaborators performed bronchography in seven patients suffering from Ayerza's disease. In all cases the picture of the bronchial tree was that of the so-called winter tree, in which the branches (bronchi of large caliber) but not the foliage (bronchi of small caliber) could be seen. The bronchographic aspect of "the winter tree" is due to retention of iodized poppy-seed oil in the bronchi of large caliber and it is a characteristic of either chronic bronchitis with dilatation of the bronchi or diffuse sclerosis of the lung and emphysema. The retention of iodized poppy-seed oil in the bronchi of large caliber shows that the alveolar part is involved in the pathologic process earlier than any other segment of the tree. The condition interferes with the aspiration of air by the alveoli and its entrance in the alveoli and also with the diffusion of gases through the alveolar endothelium. Insufficient inspiration and expiration follows and, as a result, the syndrome of hypoxemia and hypercapnia develops. The constant presence of chronic bronchitis and subsequent dilatation of the bronchi in all the authors' cases prove their statement that cardiovascular insufficiency and the metabolic disturbances of Ayerza's disease are secondary to respiratory insufficiency due to chronic bronchitis and its sequels. Dilatation of the bronchi is selectively located in the bronchi of large caliber and intensifies itself as the disease progresses. It is interpreted by the authors as caused by a detrimental action of chronic bronchitis on the structure, elasticity and kinetics of the bronchi. Dilatation was of the bronchiectasis cylindric type in all the authors' cases, which explains the lack of fetor in the bronchial secretions of patients suffering from Ayerza's disease. The dead space was increased in proportion to the intensity of bronchial dilatation in all cases. The anatomopathologic study of the bronchial lesions confirmed the part that chronic bronchitis played in the onset and evolution of the syndrome of Ayerza's disease.

Klinische Wochenschrift, Berlin

15: 289-328 (Feb. 29) 1936. Partial Index

Tumor Specificity and Tumor Genesis. H. J. Fuchs and H. Kowarzyk.—p. 289.
Vitamin C Studies on Urine and Blood. E. Gabbe.—p. 292.
Studies on Increase of Porphyrin in Erythrocytes. K. Lagedet.—p. 296.
*Treatment of Epidemic Meningitis with Roentgen Rays. H. Hippe and U. Grüninger.—p. 304.
*Is Ice Bag Advisable in Gastric Hemorrhages? M. Dobreff.—p. 308.

Treatment of Epidemic Meningitis with Roentgen Rays.—Hippe and Grüninger direct attention to a former report on the use of roentgen rays in meningitis (abstracted in The

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JOURNAL, Sept. 8, 1934, p. 793) and describe their more recent experiences with this treatment. They report the histories of two children with epidemic meningitis, in whom roentgen irradiation has had a favorable effect on the signs of irritation that remained after treatment with lumbar puncture, meningococcus serum and blood from adults. In the first child the rays were applied to five cranial fields (two temporal fields and one each in the frontal, parietal and occipital regions) and one cervical field. The irradiations were made on six successive days, each field receiving 150 roentgens. The tension was 180 kilovolts, the current strength 6 milliamperes, the filtration 0.5 mm. of copper and 1 mm. of aluminum, the distance 30 cm. and the size of the fields 8 by 10 cm. In the second case the rays were applied to five cranial fields (120 roentgens each). In the conclusion the authors point out that they do not expect from the roentgen treatments an influence on the causal organism as such, but they aim to reduce the secretion of the choroid plexus and thus the pressure of the cerebrospinal fluid. On the other hand, they think that the anti-inflammatory action of the roentgen rays exerts a favorable influence on the inflamed meninges. Since in the roentgenotherapy of inflammations not only the dosage but also the time of the treatment is important, they suggest that the usual treatment be employed (lumbar puncture with removal of the cerebrospinal fluid and serotherapy) during the acute stage of the meningitis. However, if this treatment does not result in the complete disappearance of fever and of the meningeal signs, roentgenotherapy should be resorted to.

Use of Ice Bag in Gastric Hemorrhages.—Dobreff reviews the literature on the subject and finds that, although there are some contradictions, the majority of the investigations indicate that the application of the ice bag results in an increased kinetic and secretory action of the stomach. Since the increased activity of an organ is accompanied by a greater blood perfusion, it becomes evident that the application of the ice bag produces the exact opposite effect of that which is desirable in case of gastric hemorrhages. Since the definite solution of this problem is of considerable importance, the author studied the effect of the ice bag on the motility, secretion and visible changes in the gastric mucous membrane in a woman in whom a gastric fistula had to be made on account of complete stenosis of the esophagus. In other respects the woman was healthy. The direct observation of the inside of the stomach was done by means of Kalk's laparoscope introduced by way of the fistula. It was observed that the application of the ice bag to the skin in the region of the stomach resulted in an increase of the peristalsis, hyperemia of the mucous membrane and increased secretory action, whereas the application of a hot water bag had exactly the opposite effect; namely, reduction of the peristalsis, anemia of the mucous membrane and reduction of the secretory action. On the basis of these observations and of reports in the literature, the author concludes that the application of the ice bag is contraindicated in gastric hemorrhages.

Wiener klinische Wochenschrift, Vienna

49: 321-352 (March 13) 1936. Partial Index

*Hepatorenal Syndrome. J. Faltitschek and L. Hess.—p. 325.
Permanent Results of Nonspecific Treatment of Diabetes. G. Singer.—p. 326.
Treatment of Actinomycosis by Means of Surgery and Lymph Node Extract. F. Trauner.—p. 330.
Silent Cavity. A. Sattler.—p. 331.
Treatment of Menstruation Disturbances. J. Novak.—p. 337.

Hepatorenal Syndrome.—Faltitschek and Hess point out that cellular impairments of the liver, if they reach a severe degree, cause disturbances in the water exchange. Edema has been observed in patients with hepatic diseases in which cardiac and renal causes could not be detected. Water retention has been noted in catarrhal icterus, and it is also known that the water elimination increases as soon as the jaundice subsides in these cases. In acute atrophy of the liver, one of the typical symptoms is oliguria, and occasionally anuria. Then there is biliary cirrhosis, in which decrease in temperature and the disappearance of jaundice is accompanied by polyuria. However, in addition to the hepatic, there is also a renal factor concerned in the disordered water economy of patients with liver disease. The occurrence of icterus cylinders and frequently a mild albuminuria indicate an anatomic lesion of the kidney, but in addition to this it may be assumed that the liver influences the water economy by a hormone action on the kidney. The authors demonstrate that this renal factor plays a rather important part in the clinical and pathologic aspects of liver diseases. In regard to the pigment elimination, they point out that hemolytic icterus, which is accompanied by blood decomposition, takes an acholuric course, because the indirect bilirubin that develops from the decaying erythrocytes is not suited for elimination by the kidneys and accumulates in the blood. The authors demonstrate that even the direct bilirubin fails to pass the kidney under certain conditions in spite of the fact that it is present in the blood in amounts far in excess of the physiologic measure. In such cases icterus and acholuria appear in spite of considerable direct bilirubinemia. The authors report three cases. The episodically appearing icterus was not of hemolytic origin: this is proved by the pigment content of the feces, the absence of an impaired resistance of the erythrocytes and the presence of direct bilirubin in the serum. Although the latter reached high values in the serum, there was no bilirubinuria, because the kidney had lost its capacity to eliminate bile pigment. With the return to normal renal function, the excessive amounts of bilirubin disappeared from the blood. The authors cite other cases from the literature that resemble the ones observed by them.

Zentralblatt für Gynäkologie, Leipzig

60: 545-608 (March 7) 1936

*Radium Treatment of Climacteric Hemorrhages. K. J. Anselmino.—p. 547.
Accompanying and Causally Significant Cases of Adenomyosis Interna, Particularly Cases of Adenomatous Carcinoma of Uterus and Cases of Granulosa Cell Tumors of Ovary with Adenomyosis Interna. H. Rockstroh.—p. 550.
Diagnosis of Chorion Epithelioma from Cerebrospinal Fluid. F. K. Ewald.—p. 559.
Submucous Uterine Cyst. V. Dubrauszky.—p. 564.
New Proofs for Pathogenic Significance of Trichomonas Vaginalis. M. Redecurt.—p. 567.
Treatment of Leukorrhea in Virgins. G. Bakács.—p. 568.

Radium Treatment of Menopausal Hemorrhages.—Anselmino says that in spite of the increasing use of radium treatment in menopausal hemorrhages there is no general agreement regarding the dosage and the type of cases in which it is advisable. He shows that some apply doses upward to 3,000 mg. element hours, others use doses as small as from 600 to 800 mg. element hours and many now apply doses of 1,200 mg. element hours. At his clinic the doses have been steadily decreased from as high as 3,000 mg. element hours in 1928 to around 1,000 mg. element hours in recent years. Before evaluating the results of the after examinations of ninety-eight women who in the course of the last several years had received radium treatment for menopausal hemorrhages, he discusses the technic. He always precedes the radium treatment by a curettage. Then he introduces 50 mg. of radium element, which is deposited in units of 10 mg. in five silver tubes 0.1 mm. in thickness, which in turn are enclosed together in a brass container that has a wall thickness of 1.5 mm. In evaluating the results that were obtained at his clinic, he finds that the cases that have been treated with doses from 800 to 1,200 mg. element hours react quite favorably to the treatment in that there was only one failure in fifty cases. A tabular report indicates that the higher the age of the woman at the time of the treatment, the better the effect of the rays; that is, smaller doses produce the desired effect. The more moderate doses have the advantage of not causing complications, there are no signs of intoxication, and the symptoms of abolished function are mild; that is, somewhat like those of the normal menopause. Many women complain of leukorrhea after the radium treatment, but this disorder usually disappears in several weeks or months. In discussing the indications for the radium treatment, he says that it is hardly ever employed in women under 40 years of age. He himself employs it as a rule only in women over 42 years of age who have climacteric hemorrhages. In these he usually does not differentiate whether a glandular hyperplasia exists

or not. However, in the milder cases he usually limits the treatment at first merely to a curettage. Thus the radium treatment is usually reserved for the more severe cases. For younger women he considers surgical intervention in the form of a supravaginal amputation or of a fundus resection advisable, in that such interventions do not affect the general organism as much as an exclusion of the ovarian function with radium therapy.

Vestnik Khirurgii, Leningrad

41: 1-449 (Nos. 114-115-116) 1935. Partial Index

Basic Principles of Shock Therapy as Applied to Diseases of Gastro-Intestinal Tract. S. M. Ryss.—p. 16.
*Shock Therapy of Ulcerative Disease of Stomach and Duodenum by Intravenous Infusion of Heterogenous Blood. S. M. Ryss, K. V. Stroykova, V. I. Vvedenskiy.—p. 28.
Treatment of Hemolytic Shock with Method of Gesse-Filatov. L. E. Elyashevich.—p. 70.
Internal Strangulation After Gastric Operations. E. Khr. Kobb.—p. 117.
*Gastro-Intestinal Obturation and Chloride Content of Blood. V. M. Voskresenskiy.—p. 126.

Use of Heterogenous Blood for Shock Therapy.—Ryss and his co-workers believe that allergy with local manifestations in the gastric mucosa is the basis of ulcerative disease in many cases. They obtained arterial blood from a dog and administered it intravenously in doses of from 1 to 15 cc. Two or three injections at intervals of from five to ten days constitute a course of treatment. There were in this group sixty-four cases of intractable recurring ulcer disease and ten cases of recurring ulcer after a gastro-enterostomy. The patients were kept on a liberal ulcer diet from which animal albumins as potential allergens were excluded. Good results were obtained in 80 per cent, satisfactory results in 12 and no effect in 8. The authors selected hemoprotein of heterogenous blood as the most suitable stimulant, because it is nontoxic and does not cause late complications, such as paralysis or neuritis, because it possesses considerable antigen qualities due to ready solubility of its albumins and because it raises the cellular metabolism and phagocytosis. It is capable of activating separate organs and systems, in particular the connective tissue and the reticulo-endothelial system. By activating the regenerative and immunobiologic properties of the mesenchyma it favors early healing of the gastric duodenal ulceration. The best results were obtained from a course of three injections of large doses, 5, 10 and 15 cc. of blood.

Blood Chlorides in Gastro-Intestinal Obstruction.—Voskresenskiy reports 428 determinations of blood chloride made in eighty-three patients suffering from acute paralytic or mechanical ileus. He found that a fall in blood chlorides to 300 mg. constitutes a grave prognostic sign in cases of acute ileus. Sodium chloride administered intravenously rapidly concentrates within the lumen of the intestine. The greater number of their patients suffering from acute paralytic ileus responded with a lively peristalsis to intravenous infusion of hypertonic solutions of sodium chloride. This effect was not obtained when the intestine was gangrenous. In order to obtain a therapeutic effect in cases of paralytic ileus it is necessary to inject about 200 cc. of a 10 per cent solution of sodium chloride.

Acta Medica Scandinavica, Stockholm

80: 1-127 (Feb. 28) 1936. Partial Index

Relations Between Glycemia and Glycosuria. M. Roch, E. Martin and F. Scichoneff.—p. 1.
Behavior of Sodium Content in Blood Serum in Thyrotoxic Conditions. B. Feldmann.—p. 39.
Method for Making Graphic, Intermittent-Continuous Registration of Arterial Blood Pressure (Pletonography). E. Eldtdom.—p. 45.
*Urobilinuria Following Water Tolerance Test in Hepatic Diseases. E. Adlercreutz.—p. 53.
Comparative Features of Epidemic and Endemic Poliomyelitis in Denmark: Endemic Appearance of Poliomyelitis in Copenhagen 1934. N. I. Nissen.—p. 72.
*Treatment of Obesity by Diet Relatively Poor in Carbohydrates. P. Hanssen.—p. 97.

Urobilinuria Following Water Tolerance Test.—Adlercreutz points out that numerous studies have demonstrated that the liver plays an important part in the water economy of the organism. Disturbances in the hepatic function are usually accompanied by impairment of the water exchange, and in parenchymatous diseases of the liver an inhibition in the diuresis is often observed. The author describes the water tolerance tests he made on thirteen patients with various disorders of the liver (eight with acute hepatitis, two with hepatic cirrhosis, one with cholelithiasis and two with hepatic stasis). The tolerance tests were made in the form of the ordinary Volhard experiment with 1 liter of water taken in the morning, while the patient is still fasting and in as short a time as possible. After that the urine is collected at hourly intervals for four hours. These specimens are tested as to quantity, specific gravity and urobilin content. The urobilin concentration is determined in the night urine as well as in the day urine and control tests are made throughout the patient's stay at the hospital. Adler's modification of Schlesinger's fluorescence reaction (in the presence of alcoholic solution of zinc acetate, urobilin produces a greenish fluorescence) served for the determination of the urobilin content. All cases of hepatitis with one exception, both cases of cirrhosis and one case of hepatic stasis showed a greater or lesser increase in urobilin. The author thinks that this is due to the fact that the water tolerance test increases the bile secretion and thus causes the increased elimination of the urobilin that had become stored in the liver as the result of a deficient function. Moreover, the urobilin content of the digestive tract increases and a reabsorption follows here; the urobilin passes the liver unchanged, enters the blood stream and then the urine, and increased urobilinuria results. However, in some cases the urobilinuria failed to appear. This occurred in cases in which there was a severe disturbance in the water economy. In some instances the water tolerance test had a surprising therapeutic effect in that the icterus disappeared quickly. However, this effect was largely dependent on the stage of the disease in which the water test was made. The phenomenon is probably related to the water exchange, for, if the latter was greatly impaired, the water tolerance test was even followed by a further exacerbation of the disorder.

Treatment of Obesity by a Diet.—Hanssen cites studies by Hagedorn and others, which proved that obesity results from an abnormally increased transformation of carbohydrates into fat, owing to an anomaly of the metabolism. In the treatment of twenty-one obese patients the author took this origin of obesity into consideration in that he restricted the carbohydrate intake of the patients in order to prevent a surplus of carbohydrates being deposited as fat. To be sure, the amount of carbohydrates should be sufficient to insure combustion of fat without acidosis. The patients were given a diet that provided generous amounts of greens, some fruit, meat or fish in amounts of from 100 to 125 Gm., 100 Gm. of bread, 65 Gm. of cream, 65 Gm. of butter, 35 Gm. of cheese, two eggs and 25 Gm. of olive oil. In the preparation of the foods, the use of flour and sugar was avoided and substitutes were used instead. The daily food intake was approximately equal to 1,850 calories (71 Gm. of protein, 117 Gm. of fat and 112 Gm. of carbohydrates). Exercises that might tire the patients were avoided, but care was taken that they got some fresh air every day. The author asserts that the average weekly loss of weight was 0.87 Kg. He compares these results with those obtained in other hospitals and finds that with his method the patients lose about the same amount of weight with an intake of 1,850 calories as is the case in another hospital in which the intake of patients under treatment for obesity is only 950 calories. In a third hospital in which the daily intake was only 765 calories, the loss in weight was somewhat greater. Whereas the diet prescribed by the author was rich in fat and relatively low in carbohydrates, it was the opposite in the other hospitals. Besides effecting a reduction in weight with a relatively high caloric intake, the author's diet has the added advantage that it is more readily adhered to after the patient has left the hospital. This is important, since in a metabolic disorder such as obesity treatment must be continued. Examination of the author's patients from four to twenty months after they had been discharged from the hospital showed that the results were quite satisfactory.

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